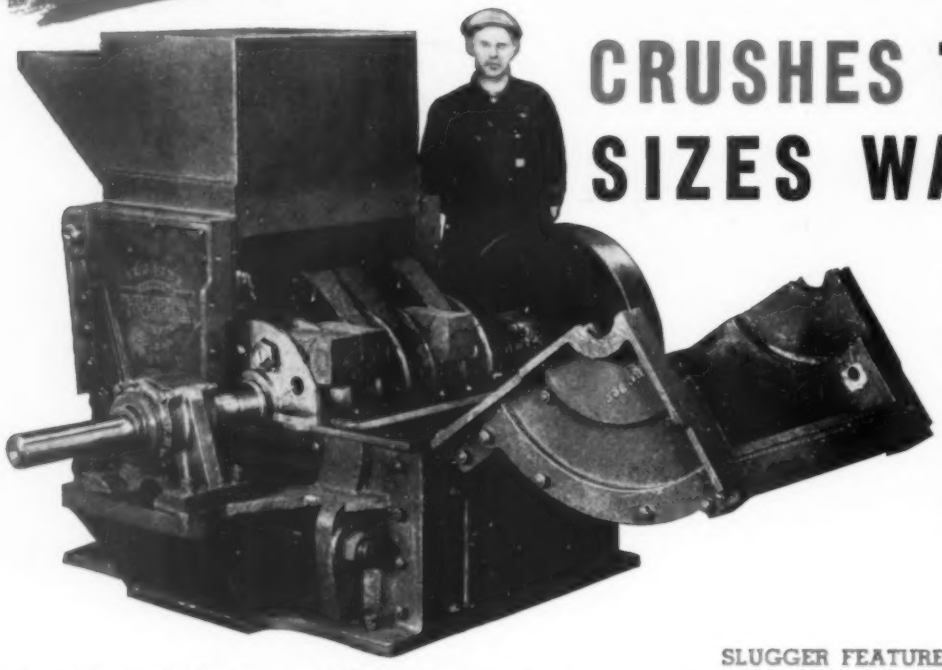
Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

JULY, 1941

ONE OPERATION!



CRUSHES TO THE SIZES WANTED

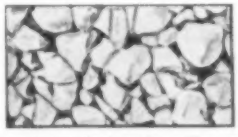
REDUCES "ONE-MAN" SIZE STONE TO 1¼", ¾" OR AGSTONE IN ONE OPERATION AT THE RATE OF 6 TO 300 TONS PER HOUR

The "Slugger" Crusher and Pulverizer represents the most advanced type of crushing equipment on the market today. It is now possible to crush hand loaded rock, stone weighing from 75 to 100 pounds to 1¼", ¾" or agricultural limestone in One Operation. This not only eliminates sledging but also does away with the unnecessary expense of a primary crusher. Larger Williams crushers handle power shovel loaded stone.

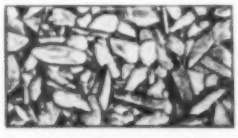
SLUGGER FEATURES INCLUDE

- **MANGANESE STEEL HAMMERS.** Heavy duty slug end hammers are standard equipment in the "Slugger".
- **HAMMER ADJUSTMENTS OVERCOME WEAR.** Discs are arranged so that the hammers can be set out as they wear on the end.
- **MANGANESE STEEL ADJUSTABLE BREAKER PLATE.** Adjustable towards the hammers.
- **ELECTRIC STEEL FRONT END.** The part which holds the breaker plate is electric steel cast—3½ times stronger than cast iron.
- **COVER AND SIDE LINERS 1" THICK.** Manganese steel liners.
- **SEVEN SIZES.** 30 to 150 horsepower, stationary or portable models.

COMPARE THE PRODUCT



The above photo shows rock crushed with the "Slugger". Note the desirable cubular shape of the stone.



The photo at the right shows rock not crushed with a Williams—note the slivers—both samples are from the same ledge.

WILLIAMS FINE GRINDING AND AIR SEPARATING EQUIPMENT

ROLLER MILLS WITH AIR SEPARATION

Whatever the fine grinding job—Limestone, Lime, Coal, Talc, Gypsum or similar material there is a Williams Roller Mill to fit your particular requirements from 100 to 400 mesh grinding.

IMPACT MILLS WITH AIR SEPARATION

For grinding hydrated lime to 99.99% 325 mesh, clays, filter press cake—Dries and Grinds simultaneously.

MECHANICAL AIR SEPARATORS

For classifying material that has already been ground or for taking the fines out of any dry material that it is desirable to classify. Usually operates in closed circuit with a pulverizer and it may be used in this way with almost any type mill.

THE WILLIAMS PATENT CRUSHER & PULVERIZER CO.

800 St. Louis Ave. . . . . St. Louis, Mo.

Sales Agencies Include

CHICAGO
37 W. Van Buren St.

NEW YORK
15 Park Row

OAKLAND, CALIF.
1629 Telegraph Ave.

Williams

OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

PATENT CRUSHERS GRINDERS SHREDDERS

Rock Products

Recognized the World Over as the Leader in Its Field

With which has been consolidated the journals *Cement and Engineering News* (founded 1896) and *Concrete Products* (established 1918)

VOL. 44, No. 7, JULY, 1941

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ROCK PRODUCTS
Owned and Published by
TRADEPRESS PUBLISHING CORPORATION
PUBLICATION OFFICES
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Telephone—Harrison 7890

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Subscription Price: United States and Possessions, Mexico, Cuba, Canada, $2.00; and $4.00 to foreign countries. Twenty-five cents for single copies. Indexed in the Industrial Arts Index.

To Subscribers — Date on envelope indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

ROCK PRODUCTS Bears the Twin Hall-Marks of Known Value.

Audit Bureau of Circulations — Impartial measurement of reader interest in terms of paid circulation.

★

ABP — Authentic facts relating to editorial scope and readership analysis.

(PUBLISHED MONTHLY AT CHICAGO, ILL., U. S. A.)

Entered as second-class matter, Jan. 30, 1936, at the Chicago, Ill., postoffice under the Act of March 3, 1879.

Giants of the rails kept safe with ballast from Wyoming's hills

Typical S-A low cost per ton handling . .

One of the largest crushed-gravel-ballast producing plants in the U. S. is this Evanston, Wyoming, plant of Utah Sand & Gravel Products Corporation, built by S-A.

The plant produces 1,000 tons per hour of pit run material. To provide economical carloading and pit excavation, the plant was designed to be on the floor level with the grade of the Union Pacific tracks.

Not only Belt Conveyors, but Feeders, drives and auxiliary equipment were furnished by S-A . . . typical of the complete engineering and manufacturing facilities we are equipped to furnish for *your* job. *Write us for Material Handling Data Books or inquire about your particular Material Handling problem.*

Stephens-Adamson

— Mfg. Co. —

7 RIDGEWAY AVE. AURORA, ILL.

Los Angeles, Cal. Belleville, Ont.

STEPHENS-ADAMSON CONVEYORS

Amsco Pumps Give Longer Wear

They Can "Take It" Because the "COUNTERFLOW" Design and Amsco Manganese Steel are Unbeatable

THE "COUNTERFLOW" design of Amsco Dredge Pumps forces circulation of clear water between the impeller shrouds and the side plate liners, reducing abrasive wear. The wide funnel-mouthed impeller minimizes end thrust and internal leakage. Another important feature of Amsco design is the method of securely attaching the impeller to the shaft either with threads or tapered bore and lock nut.

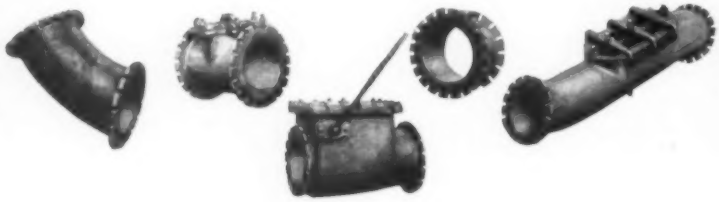
All Amsco Dredge Pump "water-ends" are made of genuine 13% Manganese Steel, which, beyond comparison, resists abrasion associated with severe repeated impacts.

Wherever sand and gravel are being dredged at the lowest cost and with minimum maintenance and shut-down time, you are likely to find Amsco on the job. More Amsco Dredge Pumps are used for commercial sand and gravel production than any other make; and many are also employed in river and harbor dredging.

For steady, economical, trouble-free production of aggregates, the sand and gravel industry has voted overwhelmingly with its equipment dollars for the Amsco line of manganese steel dredge pumps.

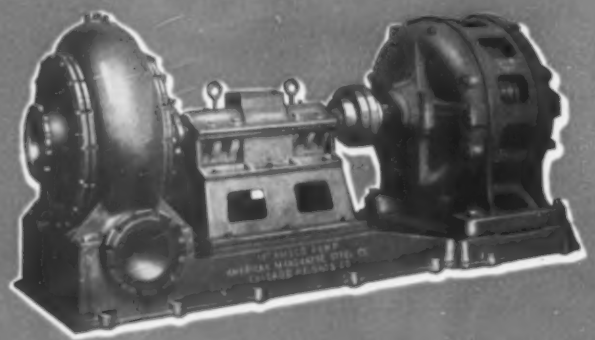
If you haven't already seen them, send for our latest Bulletins on dredging and material handling pumps, screening ladder chain, cutter heads, and pipe fittings.

Amsco Basket Type Cutter Head for clay, sand, silt and softer materials.

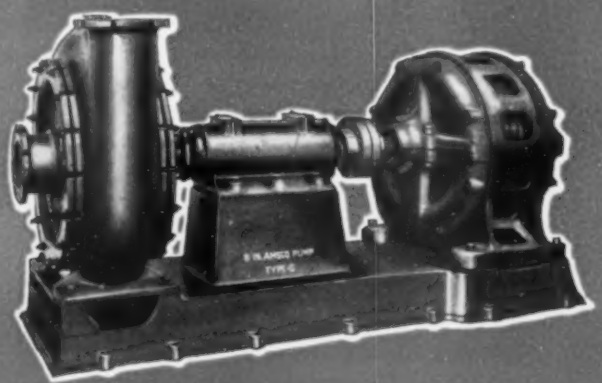


Sound wear resistant fittings are a necessary complement to a good pump. These elbows, nipples and flap valve are also made of tough Amsco Manganese Steel.

Amsco Combination Type Cutter Head for cemented gravel and impacted materials.



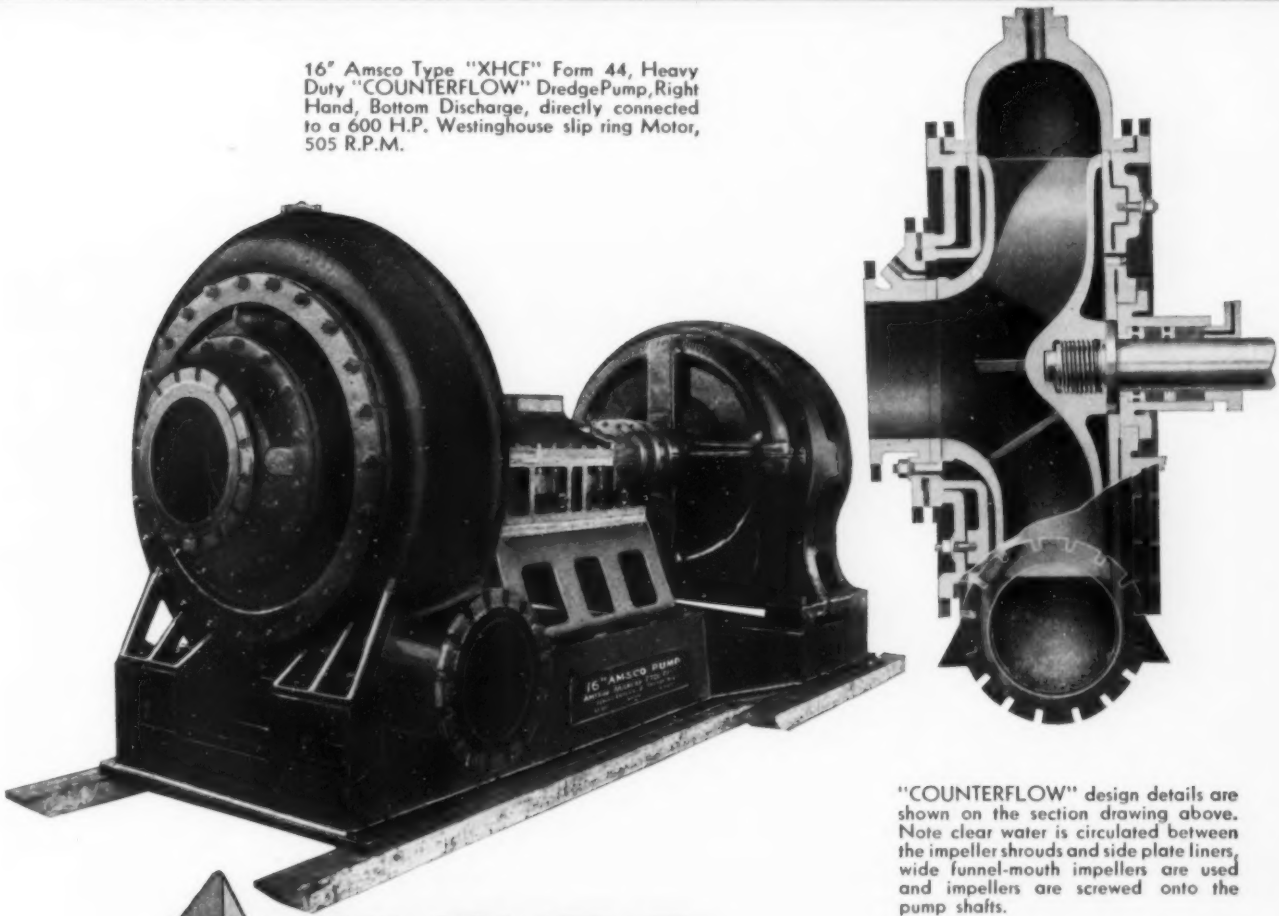
Amsco 10" Type "M," Form 31, directly connected pump with right-hand bottom discharge.



Amsco 8" Type "C" directly connected top discharge pump with combination ball thrust and ring oiling sleeve bearings.

. . . . Result in Fewer Shut-downs

16" Amsco Type "XHCF" Form 44, Heavy Duty "COUNTERFLOW" DredgePump, Right Hand, Bottom Discharge, directly connected to a 600 H.P. Westinghouse slip ring Motor, 505 R.P.M.



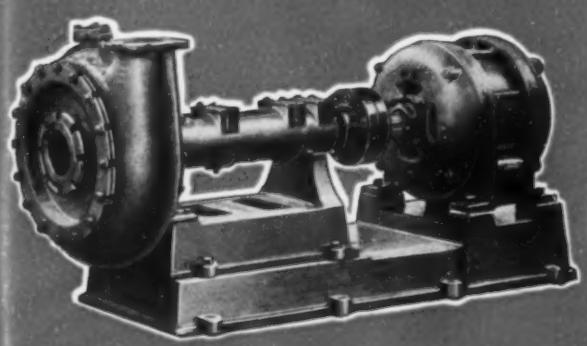
"COUNTERFLOW" design details are shown on the section drawing above. Note clear water is circulated between the impeller shrouds and side plate liners, wide funnel-mouth impellers are used and impellers are screwed onto the pump shafts.

Amsco

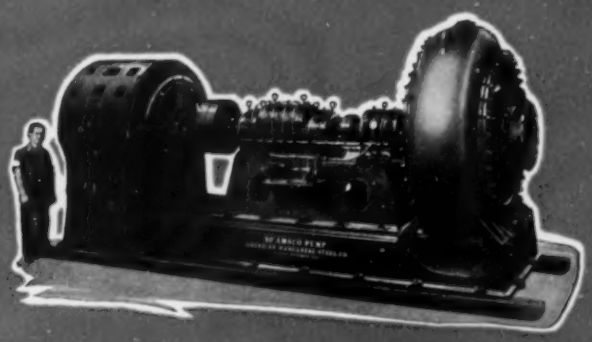
GENUINE MANGANESE STEEL, *"THE TOUGHEST STEEL KNOWN"*

AMERICAN MANGANESE STEEL DIVISION, Chicago Heights, Ill.
OF THE AMERICAN BRAKE SHOE & FOUNDRY CO.

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO. OFFICES IN PRINCIPAL CITIES.



Amsco 6" Type "I," Form 20, Pump with right-hand vertical discharge, direct motor drive and combination ball thrust and ring oiling sleeve main bearings.



Amsco 20" Type "XHCF", Form 57, directly connected "COUNTERFLOW" Pump with right hand bottom discharge, water-cooled marine type thrust bearings and force-feed lubrication.

DIMENSIONAL STONE QUARRY OPERATORS—
Here are the Advantages of using Timken Bits

IN PRODUCTION

The TIMKEN Rock Bit drills *constant* gauge holes economically. Cores are therefore narrow and even, and broaching time is usually more than cut in half. The TIMKEN Bit method permits longer lift holes and deeper channels with fewer "lost" holes. Blocks 36, 40 and even 45 feet are "lifted" to produce practically 100% productive saw blocks. Scrap loss is negligible—likewise cost of removing scrap.

IN EQUIPMENT

50 to 75% less steel is required and because sharp bits are used at all times there is less steel breakage, faster cutting with corresponding savings in drill repairs, air equipment and oil.

IN LABOR

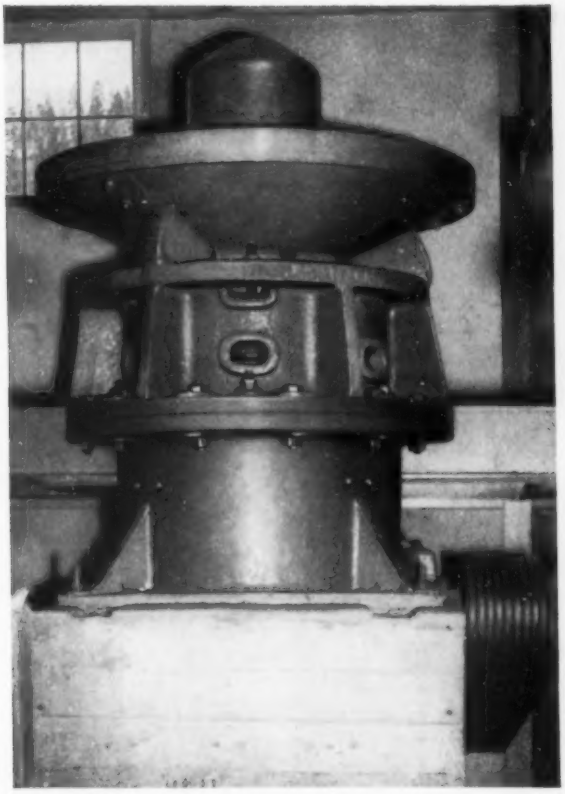
The savings in transporting steel (drill steel and broaching bars) and nipping is tremendous. In the first place you need half or less than half as much steel and second the steel remains in the quarry (only the bits are changed). Sharpening costs are reduced because usually for a 12 drill quarry only one blacksmith and helper can accomplish all necessary broaching, shanking, repairing and upsetting the threaded steel.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN
ROCK BITS

Manufacturers of TIMKEN Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; TIMKEN Alloy Steels and Carbon and Alloy Seamless Tubing; and TIMKEN Rock Bits.

More Work at less cost with MULTI-STAGE FINE REDUCTION CRUSHERS



WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Sinkers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators
Welded or Riveted Stacks, Tanks and Bins for any purpose.

Here's a report we received recently, with reference to the performance of a 3'0" Traylor Multi-Stage Fine Reduction Crusher, from an operator crushing hard gravel from a 2¼" to 1½" feed, with the top stage set to 1⅛" closed side and the bottom finishing stage 9/16" closed side.—"• • • this crusher is doing as much, or more, than we formerly did with a 7" ..... crusher, a 2'4" ..... crusher and a set of 36" x 16" ..... Rolls at about 100 horsepower less. The capacity averages in excess of 100 tons per hour and the horsepower about 50."

The indicated less than a half horsepower per ton was so unusual that we checked back to make sure, but it was found to be correct. Previously we had considered these records good, and still do:—9/10 horsepower per ton, sandstone to 3/16"; 8/10 horsepower per ton, trap rock to 5/16"; 6/10 horsepower per ton, trap rock to 7/16". Observe, however, that the four records noted are right in line, and that all of them indicate efficiency that cannot fail to impress operators who have call for large tonnages of fine product.

The reasons for this efficiency are several: *first*, the upper stage is really a preliminary crusher that acts as a feeder for the lower, providing the latter with sized material which is, *second*, regulated to the exact quantity required by the lower stage to operate under full load at all times. The adjusting device of the upper stage is entirely different from, and independent of, that which governs the size of product of the lower stage. *Third*, both stages are fitted with our patented Bell Heads and Curved Concaves, which eliminate choking at any setting of both. There are *five other* exclusive features that distinguish the Multi-Stage from ordinary fine reduction crushers. Investigate this machine closely!

SEE OUR BULLETIN No. 113

TRAYLOR
ENGINEERING & MANUFACTURING CO.
MAIN OFFICE AND WORKS — ALLENTOWN, PENNA., U.S.A.

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B. C. EQUIPMENT CO., LTD., 551 Howe St., Vancouver B. C. | MANILA MACH. & SUPPLY CO., INC., Manila and Baguio, P. I. | MAQUINARIA INTERNACIONAL, S. R. L., Av. Francisco I. Madero No. 17, Desp. 214, Mexico, D. F.

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NEW NAVAL AIR BASE

Needs 370,000 yards sand and gravel

The 18″ x 30″ *Telsmith Roller Bearing Jaw Crusher* (center background) crushes the plus 4″ material rejected by the *Telsmith Rotary Grizzly*; and a No. 36 *Telsmith Gyrasphere Crusher* (left foreground) crushes 2½″ to 4″ rejected by *Single Deck Telsmith Pulsator* vibrating screen.

THIS TELSMITH PLANT RUNS 20 HOURS A DAY TO SUPPLY IT

The Navy's new 25 million dollar air base at Quonset Point, R. I., will require about 370,000 yards of washed sand and gravel. This aggregate is being furnished by the Boston Sand & Gravel Co. of Cambridge, Mass., with a brand new and completely modern Telsmith Plant located near East Greenwich, R. I.

Telsmith engineers, in co-operation with the Boston Company officials, designed the plant especially for this job, and all major equipment was furnished by Telsmith. A capacity of 150 T.P.H. was figured, but the plant produces as high as 250 T.P.H. Average production is 200 T.P.H. of Navy 1″ and 2″ aggregate and concrete sand—4000 tons per 20-hour day, with plant operating at times at temperature as low as 16° F.

For dependable advice and quick service coupled with the best in equipment, bring your problem to Telsmith. *Write for descriptive Bulletin G-11.*

SMITH ENGINEERING WORKS
500 E. CAPITOL DRIVE, MILWAUKEE, WIS.

Cable Addresses: Sengworks, Milwaukee—Concrete, London

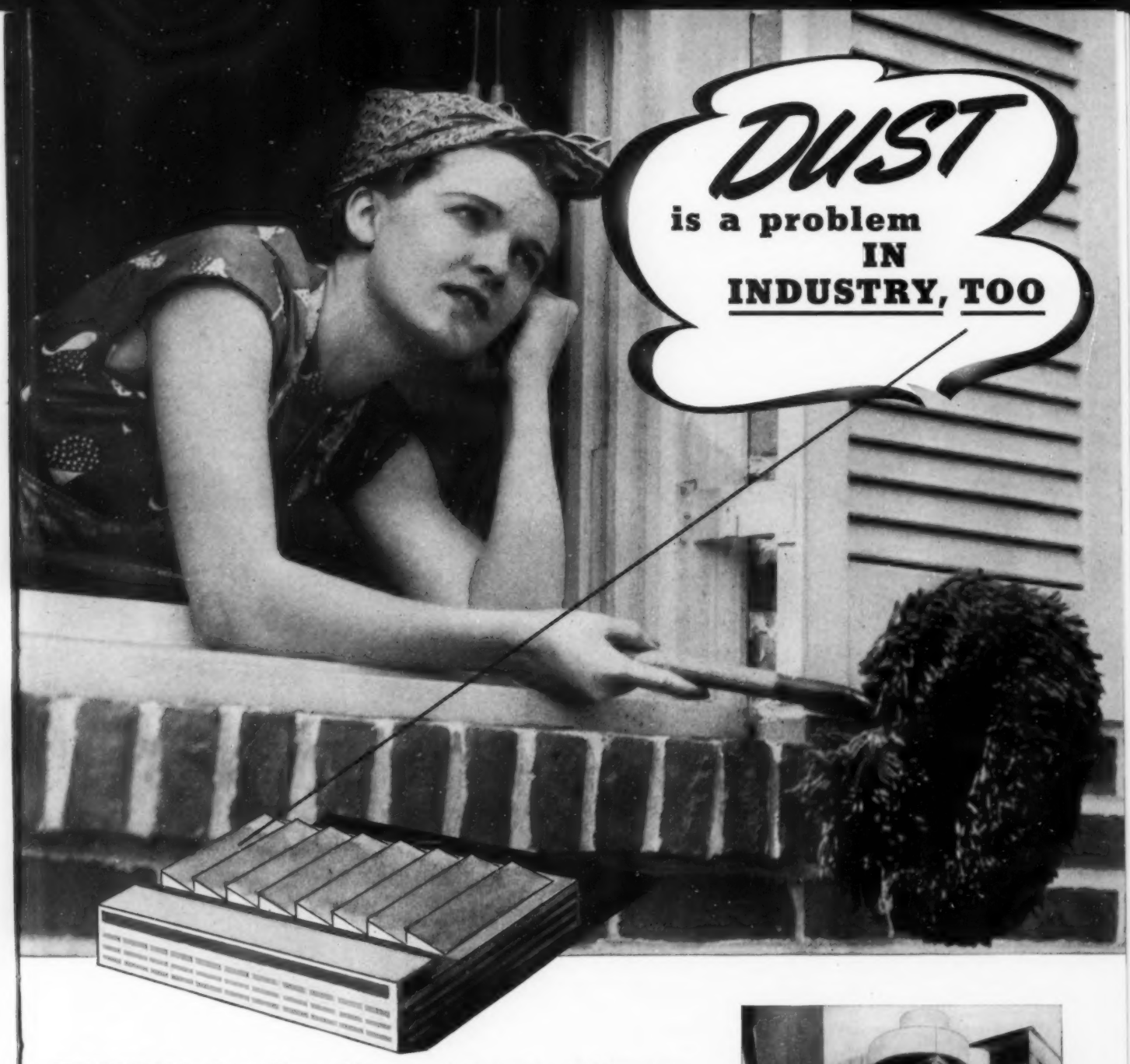
Room 1604—50 East 42nd St. New York City	211 W. Wacker Drive Chicago, Ill.
713 Commercial Trust Bldg. Philadelphia, Pa.	81 Binney St. Cambridge, Mass.
Brandeis M. & S. Co. Louisville, Ky.	Charleston Trac. & Eqpt. Corp. Charleston, W. Va.
Roanoke Trac. & Eqpt. Co. Roanoke, Va.	G. F. Seeley & Co. Toronto, Ont.

Under hopper with rail-bar grizzly, 30″ x 5′6″ *Telsmith Plate Feeder* regulates flow of material onto belt conveyor feeding scalping and crushing plant.

Throughs from a No. 450 *Telsmith Rotary Grizzly* flow over a 5′ x 10′ *Telsmith Single Deck Pulsator* and minus 2½″ goes to washing and screening plant.

Both crushers discharge onto a return conveyor and, at point of transfer to main conveyor, a 3′ x 8′ *Telsmith Double Deck Pulsator* removes fines.

60″ x 18′ *Telsmith Standard Washing Screen* scrubs and sizes gravel. 48″ x 24′ and 36″ x 20′ *Telsmith Sand Drags* wash and dewater sand.



INDUSTRY has its problems of dust, too. And American Blower has the answer to most of these problems — simple practical Dust Collectors and Precipitators to eliminate nuisance dust and reclaim valuable materials — and efficient, effective Air Washers and Capillary Washers to clear the air for industrial processes.

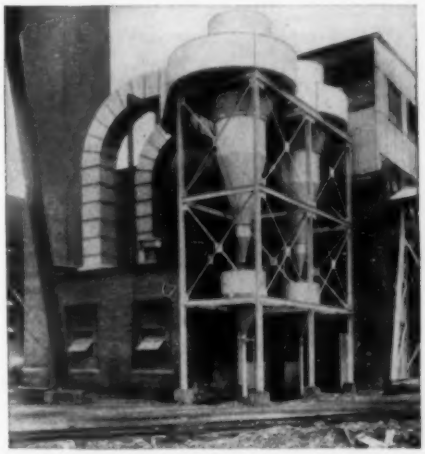
Whatever your dust problem may be—American Blower engineering dust laboratory and manufacturing facilities are at your service. Phone or wire the nearest American Blower Branch Office or write for complete data today!

Remember . . . Bad Air Is Bad Business!

AMERICAN BLOWER

AMERICAN BLOWER CORPORATION, 6000 Russell Street, Detroit, Mich.
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONT.
Division of American Radiator and Standard Sanitary Corporation

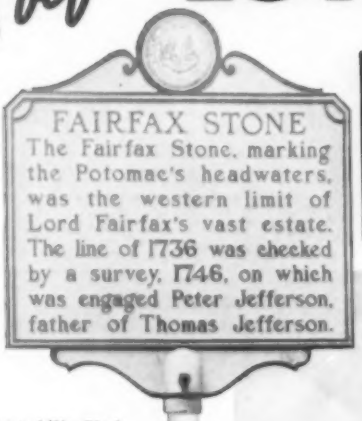
DUST COLLECTORS • DUST PRECIPITATORS • FANS • BLOWERS • AIR WASHERS



Among the many types of materials and dust successfully handled by American Blower Type "D" Centrifugal Collectors are: **foods, cement, pigments, carborundum, soap, chemicals, asphalt, cork, limestone, gluten, malt sugar, soda ash, fertilizers, sintering, grinder, smelter, blast furnace and foundry dust.** A typical installation is shown above.

Where history was made before

LOW COST TYPE "R" NEW RECORDS



Because the No. 322 Allis-Chalmers Type "R" Crusher can produce large tonnage of minus ⅜" product, both the Type "R" and the roll crusher operate only three hours a day... a big saving in power consumption and man hours for the operators of Fairfax Sand & Crushed Stone.

Let ALLIS-CHALMERS COOPERATIVE

CRUSHER SETS FOR PRODUCTION EFFICIENCY!

Fairfax Sand & Crushed Stone Co., Thomas, W. Va., Increases Capacity 50%... Slashes Operating Costs! Here's a Typical Example of How Allis-Chalmers Cooperative Engineering Works.

A member of the West Virginia Senate for 24 years, the Honorable Abraham Lincoln Helmick is an able business man as well . . . proved by the profit statement of Fairfax Sand & Crushed Stone Co.

On the site of historic Fairfax Stone, the Honorable Abraham Lincoln Helmick, dean of the West Virginia Senate, is making profits in a crushed stone plant that operated at a loss for many years before.

Chief products are railroad engine sand and concrete sand, which formerly were made by passing sandstone directly from a 6" gyratory crusher to a roll crusher. But over-size pieces quickly grooved to roll faces . . . caused over-size material to pass through the rolls and over the scalping screen as waste for which there was no market.

Then Senator Helmick took over, called in Allis-Chalmers engineers to cooperate with him on a modernization program.

Increases Capacity 50%!

By installing a new No. 322 Type "R" Crusher ahead of the roll crusher, they not only eliminated the high percentage of waste and saved the cost of grinding the crushing rolls periodically... but capacity was increased 50%...operating time of the roll crusher cut from eight to three hours a day! In 1940 Fairfax Sand & Crushed Stone showed a profit for the first time in many years!

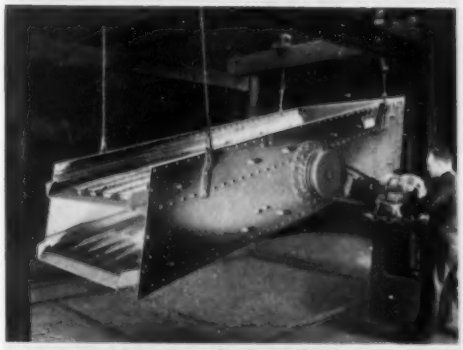
That's why Senator Helmick recently gave Allis-Chalmers the order for three modern vibrating screens and a double screw sand washer to replace outmoded equipment—made his plant 100% Allis-Chalmers-equipped!

And that's why, when a production problem comes up in your plant, you'll find it pays to call on Allis-Chalmers. Working with your own engineers, we bring the tremendous inter-related experience of the world's largest manufacturer of rock and ore reduction machinery to bear on your individual problems.

This is our cooperative engineering service. Why not let us show you how it can help you save production dollars? Write Allis-Chalmers, Milwaukee, Wisconsin. A1398

ENGINEERING *Cut your costs*

News of other Allis-Chalmers Products that cut your costs!



SMOOTHER OPERATION...INCREASED efficiency... reduced power and maintenance costs — that's what you get with the New Allis-Chalmers Ripl-Flo Screen with uniform circle throw.

THE NEW, LARGER SIZE NO. 636 TYPE "R" Crusher allows more operators to take advantage of the big savings of "Speed-Set" Control. A turn of the hand crank gives instant change of product size.

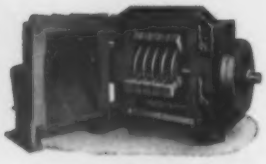
"I'M TOUGH ON MOTORS!" THAT'S what E. H. Humberstone, Superintendent, Marble Cliffs Quarries Co., Columbus, Ohio, says. That's why he uses Allis-Chalmers Lo-Maintenance Motors — 187 of them like the 10 hp motor shown here on which not one cent has been spent for repairs in 15 years.

STURTEVANT

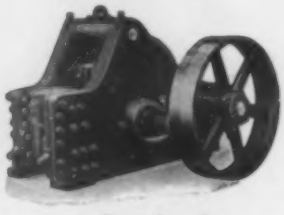
A complete Line of Equipment for the Rock Products Industry

Moto-Vibro Screens

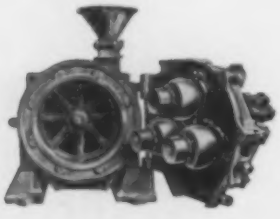
Rotary Fine Crushers



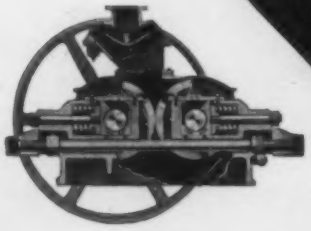
Swing-Sledge Mills



Jaw Crushers



Ring-Roll Mills



Crushing Rolls

AIR SEPARATORS

AIR SEPARATORS for finest separation of dry materials. Range of work 50-350 mesh. Capacities ½ ton to 50 tons per hour. Large feed opening, steep cones, rigid construction, Ball and Roller Bearings. Small power, low upkeep, easy adjustments. Sizes 3′ to 16′.

288 AIR SEPARATORS sold for cement alone. All on approval—none rejected. Hundreds used for Limestone, Lime, Hydrate, Gypsum, Clay, Refractories, Talc, Soapstone, Coal, Coke, Phosphates, Abrasives, etc., etc.

MOTO-VIBRO SCREENS screen anything screenable. Classified vibrations. Unit construction—any capacity. Open door accessibility. Open and closed models with or without feeders. Many types and sizes—range of work ½″ to 60 mesh.

ROTARY FINE CRUSHERS for intermediate and fine reduction (1″ to ¼″). Open door accessibility. Soft or moderately hard materials. Efficient granulators. Excellent preliminary Crushers preceding Pulverizers. Many sizes. Belt or Motor driven.

SWING-SLEDGE MILLS for coarse and medium reduction (1″ and finer). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.

JAW CRUSHERS for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.

RING-ROLL MILLS for medium and fine reduction (10 to 200 mesh) hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes, large or small capacities. No scrapers, plows, pushers or shields.

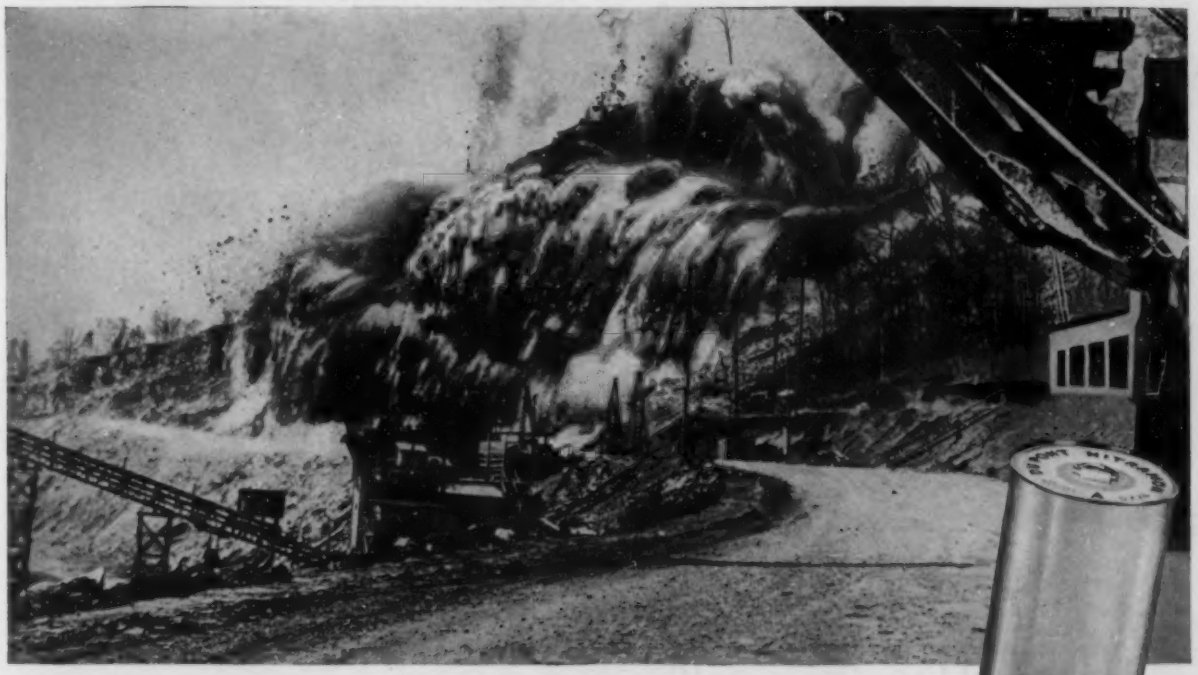
CRUSHING ROLLS for granulation, coarse or fine, hard or soft materials. Precision and automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8x5 to 38x20. Roller or Plain bearings. The standard for abrasives.

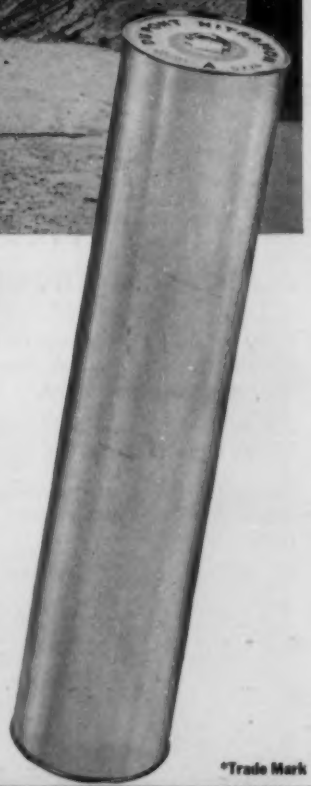
STURTEVANT MILL COMPANY

Harrison Square

BOSTON, MASS

Biggest blast in history of South brings down 506,000 tons of rock





NITRAMON* DOES THE JOB!

"There she goes"—506,000 tons of limestone for TVA's Cherokee Dam—brought down by 63 tons of NITRAMON, Du Pont's safer blasting agent. It's a record blast—for NITRAMON and for the South! But more than that, it's another indication of the acceptance NITRAMON enjoys today for blasting stone.

Whether your own jobs are *large or small,* the same features that made NITRAMON the *right* blasting agent at Cherokee will pay you dividends in greater safety and economy. Check over these six NITRAMON advantages:

(1) Greater safety because NITRAMON can't be detonated by flame, friction, Primacord, commercial blasting caps, or impact. (2) Excellent fragmentation. (3) Unlimited water resistance as long as metal containers are unbroken. (4) Non-freezing. (5) Non-headache-producing. (6) Economical to buy and shoot.

Ask your Du Pont representative to tell you which of the five grades of NITRAMON will serve you best. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington, Delaware.

*Trade Mark

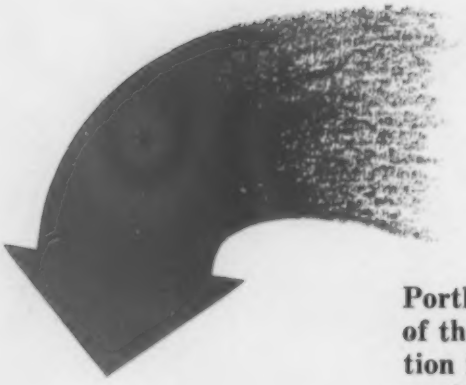
DU PONT
REG. U.S. PAT. OFF.

"NITRAMON"

THE SAFER BLASTING AGENT

To Help the Portland Cement Industry

MEET THE CHALLENGE OF DEFENSE



OPERATION

will be the keynote of ROCK PRODUCTS' Big August Cement Issue

Portland cement production is at capacity in many parts of the country as a result of defense demands. Plant operation is feeling the demand most. For continuous, intensive production, plant operation must be highly tuned. Because this is the industry's biggest 1941 problem, ROCK PRODUCTS' August Cement Issue will feature outstanding trends in cement plant operation.

AUTHORITIES in the industry and ROCK PRODUCTS' editor-engineers will describe in the August Cement Issue:

Why changes were made in modernizing a large Southern plant—stack dust recovery, clinker cooling, grinding practices.

Effect of dispersion of cement raw materials—the latest contribution on developments in grinding.

Completely rebuilt plant by leading Eastern manufacturer—one of the most modern, most complete plants in existence.

Flotation—a complete resume of the latest developments in cement raw material processing and refining by flotation.

Ball coating in dry grinding—new data on a vital grinding problem: coating of grinding balls.

Depreciation in cement plants—how to provide for keeping plants up-to-date.

How an Eastern manufacturer collects 150 tons of dust a day and returns it into raw material.

Direct firing coal mills and clinker cooling.

- Make your Reservation Early
- Preferred Positions in Special Sepia Section
- Forms Close July 20th

ROCK PRODUCTS

309 WEST JACKSON BLVD.

CHICAGO, ILLINOIS

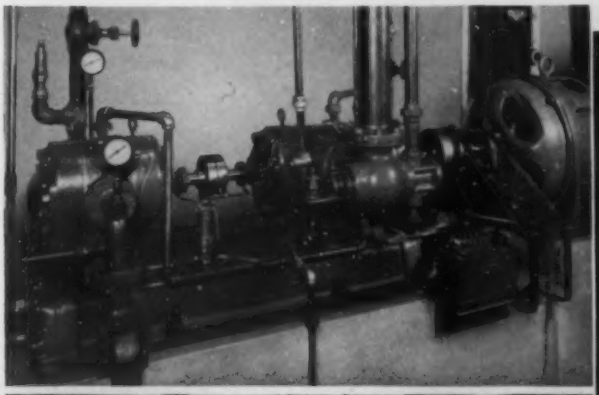
Machinery Manufacturers--Note

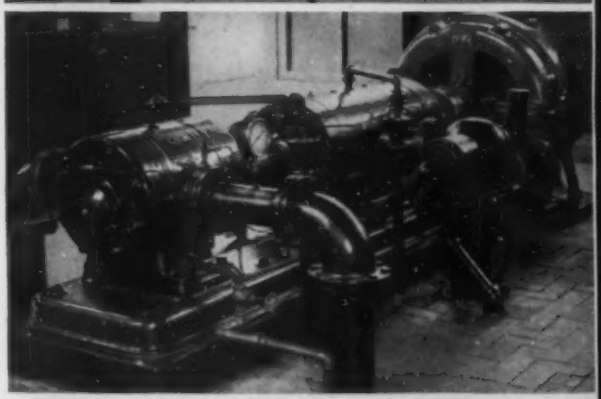
This $500,000,000 industry is in its biggest season of the best year it has had in a decade. The Cement Issue gives unexcelled readership of this *live* market. Your advertising message should be tied-in with the August Cement Issue.

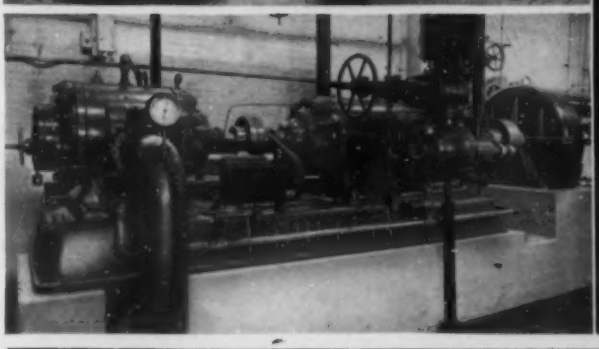
Built for TROUBLE-FREE operation

Rush! Rush! Rush! More speed all along the line. That's the cry today. But speed is not enough . . . equipment must be able to stand up under the most severe operating conditions . . . service must not be interrupted. Breakdowns—delays—time out—all mean loss of vital production and money out of pocket.

With this thought uppermost, only the best of materials and workmanship go into the makeup of Fuller Rotary Compressors. They're built for trouble-free operation and performance records prove them to be just that. When, after long, gruelling operating periods, inspection and check-up is desired, the machine design permits doing this quickly and easily.







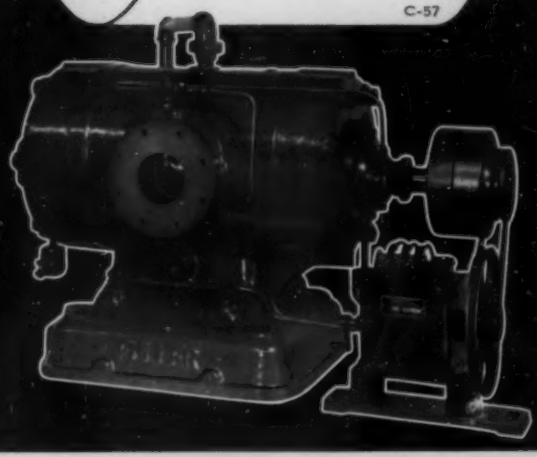
FULLER ROTARY COMPRESSORS

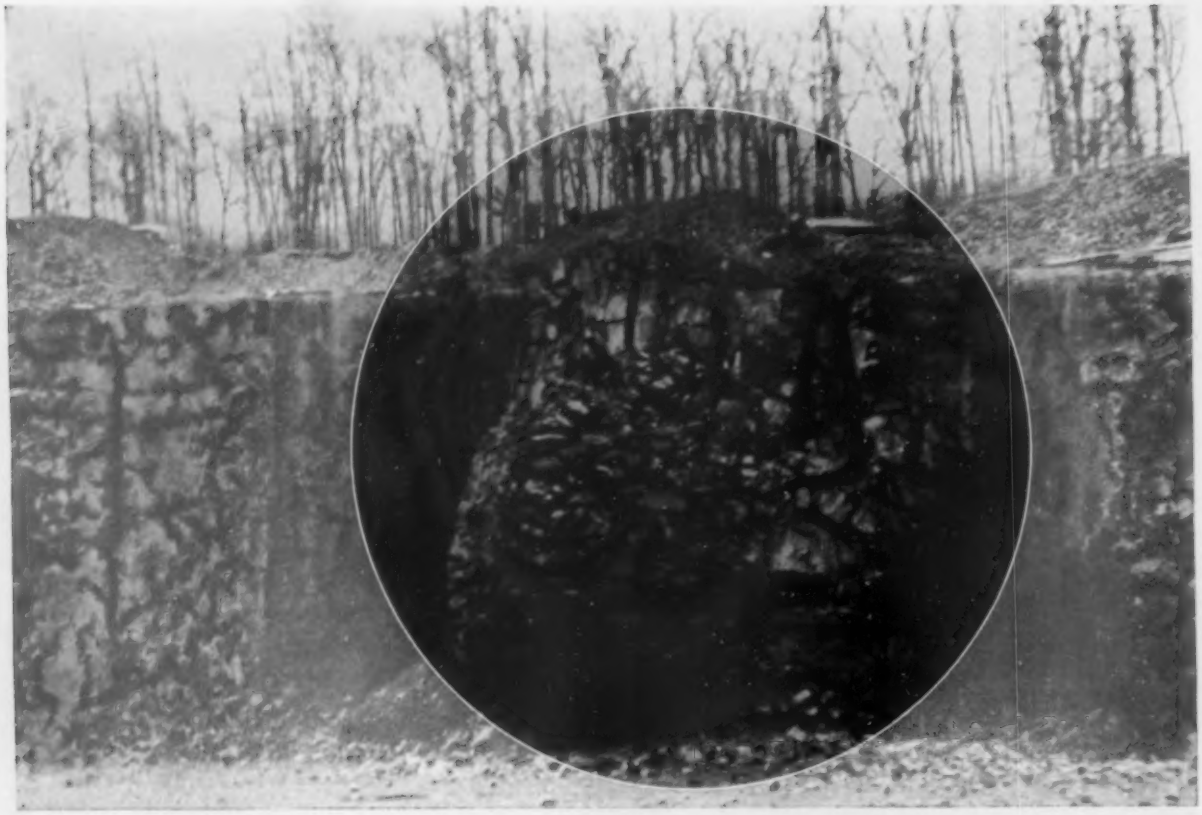
- Direct drive
- Easy to operate
- Low maintenance
- Simple foundations
- No bearing take-up
- Small space required
- No air-line pulsations
- Parts readily accessible
- Sturdy yet light in weight
- Blades automatically compensate for wear
- No valves to leak or seats to grind
- Unnecessary bulk eliminated
- Maintained capacities for the life of the machine
- No multiplicity of parts requiring frequent attention and replacement

BUILT FOR ANY PRESSURE TO 125-LB.

FULLER COMPANY
CATASAUQUA, PENNA.
Chicago: 1118 Marquette Bldg.
San Francisco: 320-321 Chancery Bldg.

C-57





Where CONTROL spells e-c-o-n-o-m-y!

A PHOTOGRAPH like this is a treat to the eye of cost-minded quarry men. Just see that rock walking out toward the camera! The bulge in the face, and the slight lift at the crest, indicate that the shot is just about perfectly balanced. When you bring rock down like this, you bring costs down too!

In this blast at Commonwealth Quarry Co., Summit, N. J.—as in so many others from coast to coast—results are traceable directly to the combination of Atlas Explosives and Atlas methods. Ask the Atlas Representative to show you what this combination can do in your own quarry!

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • Offices in principal cities • Cable Address—Atpowco

LUDLOW-SAYLOR

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

for super-severe service

●

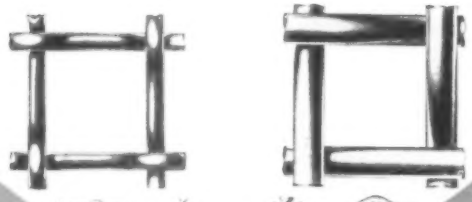
SUPER-HARD, SUPER-TOUGH, SUPER-STRONG

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

withstand abrasion longer—

endure vibration better—

resist fatigue to the utmost



The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare Arch-Crimp Weave and Double-Crimp Weave.

The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY SAINT LOUIS

Rock Products

309 WEST JACKSON BOULEVARD
CHICAGO, ILL.

July 1, 1941

Dear Subscriber:

Topeka, Kans.: Quartzite Stone Co., near Lincoln, lost about 20 employes in one week to a nearby oil pipe line contractor. Labor shortages are doubtless being experienced elsewhere.

Toledo, Ohio: City authorities who were prevented from using W.P.A. labor to produce crushed stone in competition with commercial operators have persuaded W.P.A. to pay the difference between 65¢ per ton and the current price for commercial material (about $1.10). The 65¢ is what the city paid W.P.A., although it probably cost W.P.A much more to produce it. With the W.P.A. money the city can also buy sand, gravel and slag.

St. Louis, Mo.: Concrete Aggregates, Inc., Pacific, Mo., was prevented for three months from fulfilling a defense contract for 80,000 tons of sand and gravel for the Weldon Spring TNT plant by the St. Louis czar of the A.F. of L. hoisting engineers' union, "Buck" Newell. Newell finally consented to accept 11 employes of the gravel company as members at an initiation fee of $127 each. According to the St. Louis Post-Dispatch, Newell told the president of the gravel company and the haulage contractor last February that they were "out" because his unioneers at the TNT plant would not handle the material. He gave each of them a towel, obtained from the washroom of the hotel where they were meeting, with the comment, "Here's something to cry on." Leaving the meeting, Newell gave his business card to one of them and said, "Take this down to the F. B. I. with my compliments."

Allentown, Penn.: Not quite along the line suggested on this page about two months ago, but similar to it, is a development at the Lawrence Portland Cement Co., plant, Siegfried. Two classes in machine tool operation were started late in May under the sponsorship of the local school board in cooperation with the federal program of vocational education for national defense. One class will receive instruction on Monday, Wednesday and Friday, the other class on Tuesday and Thursday. Herbert Gillespie, foreman at the Lawrence Portland Cement Co. machine shops, is instructor of the three-times-a-week class with Elvin A. Santee, foreman for the Northampton-Bath Railroad Co., as instructor for the second group. Both schools have an approximate enrollment of 20 each.

The suggestion made by ROCK PRODUCTS was that cement plant and other machine shops in our industries look for subcontracts under the defense program. With the President threatening to seize all idle machine tools, it behooves owners of well equipped repair shops to put them to some defense use.

San Francisco, Calif.: The government taking over American steamships for British service has resulted in a recent large shipment of portland cement from San Francisco to the Panama Canal by a Japanese liner, the Ginyo Maru.

San Jose, Calif.: Permanente Corp. officials are reported studying the possibilities of recovering and merchandising carbon dioxide gas (CO_2) from the waste

kiln gases, for dry ice; also five to ten tons a day of potassium and sodium hydroxides, precipitated with the stack dust, but now separated and wasted. Another use contemplated for the waste CO_2 is the manufacture of precipitated calcium and magnesium carbonates.

Bellefontaine, Ohio: On June 13 (Friday the thirteenth) with a parade, bands and floats, the city celebrated the golden jubilee of the first portland cement concrete pavement in America. Back in 1891, the city contracted with George W. Bartholomew to pave the street with concrete - and required of him a $5,000 bond that the paving would last five years. It did. They say here it was the first such street in the country. A monument, upon which is carved a wagon wheel and an automobile wheel, symbolic of the span of time since that first street was paved, was unveiled. Gov. John W. Bricker and other state dignitaries were invited to attend the festivities.

Zanesville. Ohio: Concrete products manufacturers who use steam curing methods are reminded that steam boilers are an extra hazard (to be kept in mind when taking out insurance policies) by an accident here on June 12. The boiler at the Walter Beisser concrete block plant blew up. Fortunately all the employes had just left the building after eating lunch beside the boiler.

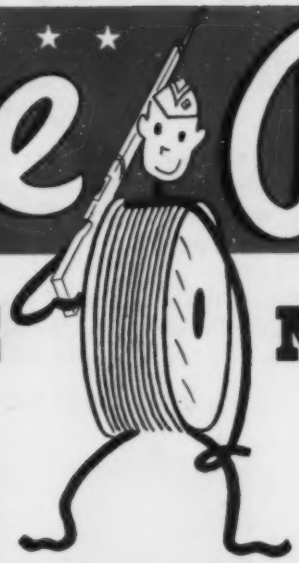
New York City: Mayor La Guardia is meeting with considerable skepticism in most parts of the country in his attempt to scare people into building bomb shelters. If his innoculation "takes", however, the cement industry can take notice of what happened in England. We find spokesmen for the industry apologizing and explaining much "unfair criticism" leveled at the industry late in 1940, when it was alleged that there was an acute shortage of cement. There were several factors which contributed to this "shortage", says an English contemporary, such as the acceleration of factory construction, intensive defense works, transport difficulties and, not least, the desire of many people (who had hitherto not heeded the Government's repeated warnings) to build air raid shelters. Although stocks were not exhausted, the industry was powerless, since at that time the allocation of cement was entirely decided by the Government through the introduction of the ill-fated coupon system, which fortunately was soon dispensed with by the Ministry of Works and Buildings.

Washington, D. C.: The President wants to let the federal government out of highway construction with an annual appropriation of only $125,000,000, yet one out of every 20 trucks now operating on the highways is owned by government, federal, state or local. And what the federal government trucks, artillery and tanks are doing to our highways is just something awful to contemplate. If there isn't a highway building program under F. D. R.'s Emergency, Unlimited, there certainly will be under the subsequent Emergency, Limited.

New York City: Demands for wage increases are broadening to include companies that are not benefiting notably earnings-wise from the defense program. Consolidated Edison employes have asked the management to reopen the wage clause in a contract expiring in November due to the increasing cost of living. The C.I.O. has presented demands for a 10 percent increase to National Sugar Refining Co. This request has been turned down but conversations continue. We might add that judging from newspaper clippings from all over the country such wage demands are not being confined to big business. Lots of small operators in our industries are experiencing similar demands.

The Staff

Wire Rope



A DEFENSE NECESSITY!

PROPER INSTALLATION ESSENTIAL

In the production of steel, coal, oil, lumber and other key industries producing for National Defense—Wire Rope is a necessity. Also, it is vital that these industries avoid delays and repairs—that they get maximum service from all equipment. Thus, for greater speed and efficiency, we recommend that inspections be made more frequently, and conditions governing the life of Wire Rope be studied more carefully at this time.

Worn Equipment Takes Life From Wire Rope

In an otherwise properly designed piece of machinery, there is nothing quite so detrimental to rope life as worn equipment.

As a rope is used, it becomes smaller from (1) the pulling down of the core allowing a further seating of the strands, and (2) from abrasion, wearing off some of the outer surface of the wires. Both reduce the diameter causing higher *unit* pressure of rope on sheave.

NO GO

The sheave groove gradually wears smaller in diameter so that frequently the worn groove diameter is smaller than the next new oversized rope. The pinching effect of the worn groove on the rope is very detrimental, causing a restriction of strand movements which would otherwise adjust themselves while bending.

This cut shows the early failure of the rope because of excessive pinching, this rope lasting only 1½ hours under the usual operating stress.

Besides wearing the groove, there is also the wearing of the sheave hub, causing a wobbling of the sheave, allowing flange wear on the rope, which might also throw out the rope reeving alignment.

Therefore, before installing a new rope, check all grooves with a set of groove gauges which are the actual size of the oversized rope. These gauges should seat all the way to the bottom of the groove.

Inspect for wobbly sheaves with worn hub bearings. Replacement or remachining worn parts is essential if good rope life is to be expected.

For further information on the above, write for "Rope Dope," our educational bulletin which is published at frequent intervals.

JUST GO

UNION WIRE ROPE CORPORATION
GENERAL OFFICES AND FACTORY:
2100 Manchester Ave. Kansas City, Missouri
Tulsa • Houston • Chicago • Salt Lake City
New Orleans • Monahans • Portland • Ashland, Ky.

UNION Wire Ropes

The "ULTIMATE LOW COST WIRE ROPE"

An Automatic Direct-Firing System that is revolutionizing cement kiln firing

Change-overs from bin-fed to direct-fired systems are not new in the cement industry. But when Whiting Impact Pulverizers . . . used for many years in foundries . . . were first installed in cement plants, a new standard of pulverizer performance and kiln-firing efficiency came upon the scene.

The striking economy of Whiting Impact Pulverizers starts with their unusual compactness. They can be installed without the remodeling of old plant structures. Furthermore, they are lower in first cost than the older types of pulverizers. Finally, they consistently reduce fuel consumption and increase kiln yield. These facts are demonstrated daily by operating records of Whiting Impact Pulverizers in several cement plants.

If you are considering any change in your fuel system, let us send you data on the operating economies you can obtain, year in and year out, with Whiting Impact Pulverizers. Quotations will be furnished on request.

WHITING CORPORATION, 15693 LATHROP AVE., HARVEY, ILLINOIS

SAVES SPACE

The Whiting Impact Pulverizer requires less space than any other type of fuel pulverizer. Note, below, how Whiting Pulverizers can be installed near raw fuel bins without plant alterations.

SAVES FUEL

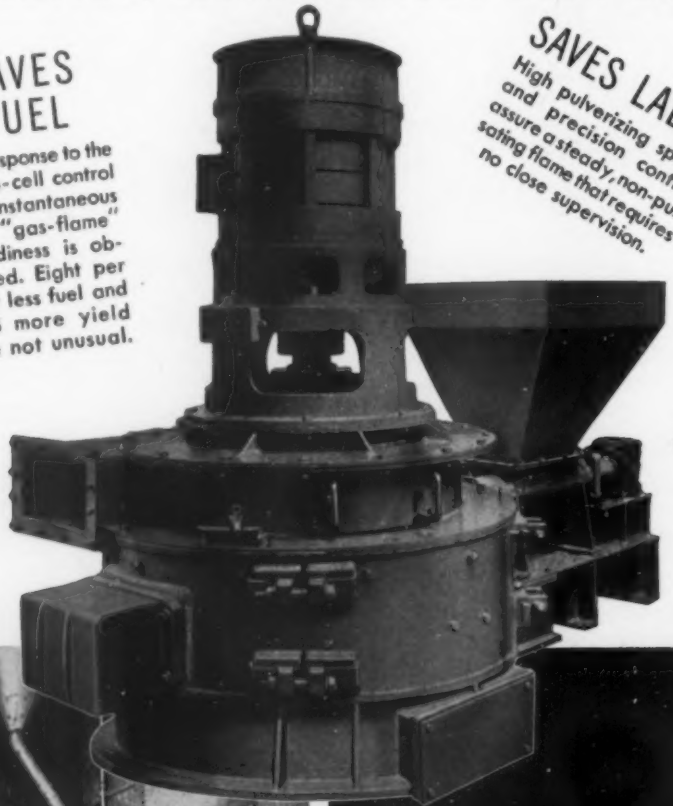
The response to the photo-cell control is so instantaneous that "gas-flame" steadiness is obtained. Eight per cent less fuel and 10% more yield are not unusual.

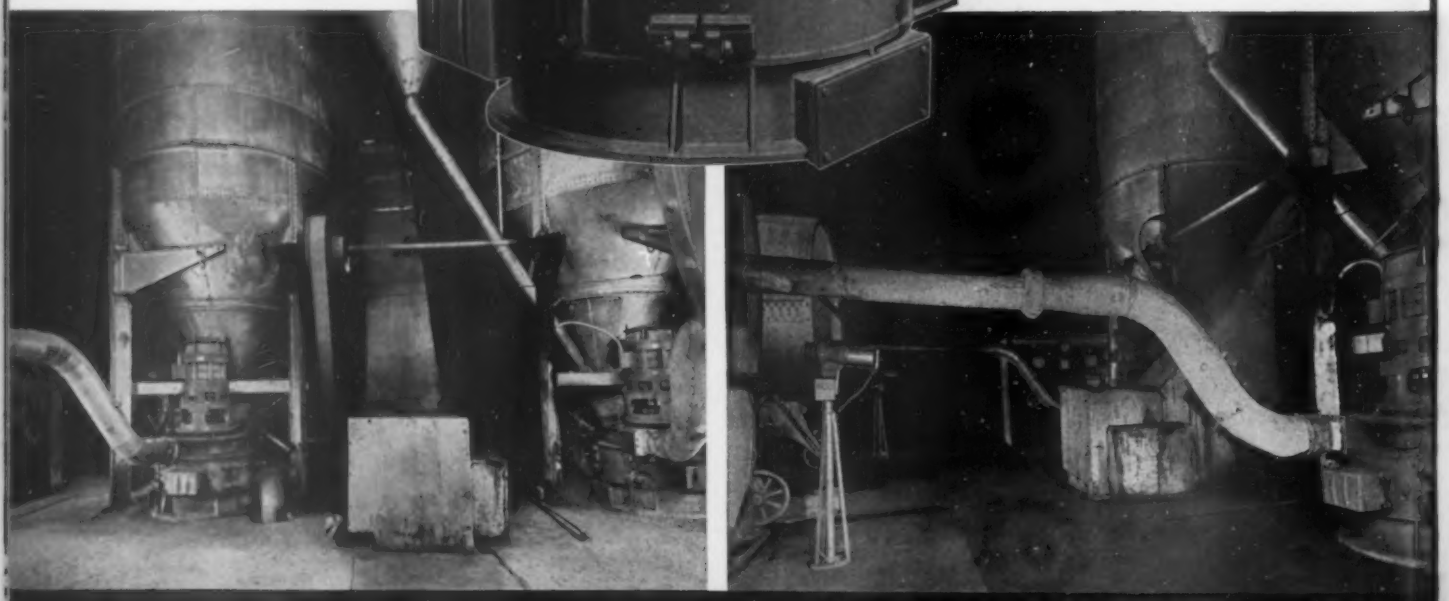
SAVES LABOR

High pulverizing speed and precision control assure a steady, non-pulsating flame that requires no close supervision.

SAVES MONEY

Elimination of costly plant alterations (to make room for pulverizers) and low first cost are important money-savers. Economy in fuel and improvement in kiln yield are additional dividend producers.





TYPICAL WHITING DIRECT-FIRING INSTALLATION IN A PENNSYLVANIA CEMENT PLANT

WHITING IMPACT PULVERIZERS

PRIORITIES

THE INDUSTRIAL SHOE has begun to pinch. It will pinch a lot more in the near future. The most important of all structural materials of course is steel. For steel is needed for ships, guns, war munitions generally. Steel shortage and priority in filling orders affects producers of rock products in many ways. Since steel can't be made without lime or limestone flux, it should give priority to lime and limestone producers. Since lime and limestone can not be produced without crushers and other equipment made of steel, producers of these materials should be able to obtain priority in purchasing such equipment. Since neither steel nor limestone can be moved without railway cars, priority for steel for railway cars is already established. But cars can't move except on rails and roadbeds, so a way will have to be found for the railways to get rails and ballast. Since neither the steel manufacturers nor the limestone and ballast producers are furnishing these materials directly to the army or navy for national defense, these are termed *civilian uses* and must come after so-called primary military defense demands have been filled!

What has been written is not to present anything new to rock products producers, but merely to illustrate how complicated and difficult of application is a priority rating for one single commodity. Multiply that by more than 300 materials now on "the critical list," and you have some idea of the red tape involved, when the manufacturer of a piece of equipment or machinery that you want to purchase tries to obtain the necessary steel and materials. Therefore, have patience with him, and assist him in every way you can.

The priority system as at present set up is administered by the Priorities Division of the Office of Production Management, but the detailed operation, where apparently most of the delay and confusion is, has been turned over to the Army and Navy Munitions Board. If the construction materials producer is supplying an army or navy job direct or through a contractor, he should be able to obtain a priority rating which is applied to the whole job, if the job is so rated. He would get this priority rating for a necessary piece of equipment or machinery he needed, either by direct application to the commanding officer of the project, or through the primary contractor's application for him. Theoretically, priority is obtained only at the request of military and naval officers. A separate priority rating has to be obtained for each piece of equipment needed, if the project has no priority rating.

If the construction materials producer is furnishing a contractor not under an army or navy defense contract, as for example an industrial plant to make munitions, or a housing project for defense workers, he must apply directly to the Priorities Division of the O.P.M. for a special form of request (PD-1). These can be obtained at any Federal Reserve Bank, or through district offices of O.P.M. being established in various industrial centers. If it is non-defense construction, such as some state highway jobs might be considered, the materials producer may still apply for a priority rating to the Priorities Division of O.P.M., and he may be able to impress them with the need. Repair, maintenance and reconstruction of strategic highways is generally considered necessary for national defense, but how necessary will depend on many considerations and the unwinding of much red tape. The best the producer could get would be a B rating, which comes after a long list of A ratings of various degrees of urgency.

The federal government is probably no more anxious to dislocate industry and throw hundreds of thousands of men in small factories out of work, than are the employers of those men. Yet under the setup everything tends to work to the advantage of concentrated big industry against the scattered little manufacturers. One possible solution might be strong associations of manufacturers of different types of machinery, not only to present their cases at Washington, but for the purpose of pooling and exchanging materials, as we understand, the radio manufacturers are already doing. Probably, in spite of all that has come out of Washington regarding shortages, there is a very general feeling that with efficient and effective handling of the problem by industry itself, there would be fewer "bottlenecks," such as machine tools piling up at projects, where construction work will not be completed for months. There is, quite naturally, not a great deal of confidence on the part of business men in an aggregation of spenders who, having no business experience, naturally do not know how to buy. There is also the very general opinion that the President's own office is the chief offender in tying up orderly rationing of materials.

Nathan C. Rockwood

NEWS AND COMMENT

Mexico Increases Cement Plant Capacity

CEMENT PRODUCTION that is calculated to cover all Mexico's requirements, an annual output of about 800,000 tons, is said to be assured for the near future with the establishment of a company and the stepping up of work by the eight plants now functioning in that country. Building construction industry has been hampered by a lack of sufficient cement since the war started.

The new company, Cementos de Guadalajara, S. A., is conditioning a mill in Guadalajara, Jalisco state. It will have two rotary kilns with a total annual capacity of 60,000 tons. Most of western Mexico will be supplied by this plant, which is expected to start in the late fall. (See ROCK PRODUCTS, May, 1941, p. 24, for further details.)

One of the leading existing producers, Cementos de Mixoac, S. A., has contracted with the Allis-Chalmers Manufacturing Co. for a rotary kiln with a yearly production capacity of 130,000 tons. Installation will almost double the plant's present production of 144,000 tons a year.

Wage Increases

EDISON CEMENT CORP., Stewartsville, N. J., recently made a retroactive agreement with employes under which wage increases of from 3 to 10c an hour were dated back to April 1.

MARQUETTE CEMENT MANUFACTURING Co., Des Moines, Ia., plant (formerly the Hawkeye) recently announced that negotiations between company officials and local No. 175 of the Cement and Mill Workers Union, a C.I.O. affiliate, resulted in a 5-cent an hour increase for all hourly pay employes and a proportional increase for piece workers. There are 296 employes, of whom 35 are piece workers. The increased cost of living was given as the reason for the wage raise. The new scale is said to be retroactive to May 16. The employes are working under a year's contract which expires October 1.

Key to Private Enterprise

DR. E. A. GOLDENWEISER, director of research and statistics for the Federal Reserve Board: "It seems apparent that in the economic system of free, private enterprise, a private system of credit is absolutely essential. No other equally satisfactory mechanism has been devised. Credit is the main source of money, the life-blood of the economic system. If complete control of credit is turned over to the government, we have an economy managed by the government; and so long as credit is privately managed, under government supervision to be sure but not under government control, we shall continue to have private economic enterprise. We want, therefore, to list private banking enterprise among the institutions which we must preserve." . . . . (Before the District of Columbia Bankers Association.)

German Cement Cartel

THE GERMAN CEMENT CARTEL, organized by the order of the Minister of National Economy in October, 1940, embracing the entire German cement industry, has recently extended its activities to the occupied countries. On January 24, 1941, an agreement was signed with the Dutch and Belgian cement industries regulating the cement sales in the Netherlands by dividing the market between the producers of the three countries. This function was performed prior to the war by an international cement cartel. There is also an agreement with the cement cartel of the Protectorate of Bohemia and Moravia for unrestricted shipment of cement into each other's territory. The producers of Slovakia have also entered into an agreement with the German cement cartel, fixing a quota for Slovak cement shipments into Germany, the Protectorate of Bohemia and Moravia, and the General Government of Poland. — Louis Domeratzky, U. S. Bureau of Foreign and Domestic Commerce.

North American Prospects In South America

THE EDITOR and the publisher of ROCK PRODUCTS do not necessarily subscribe to the views expressed in the following letter from Argentina, S. A. However, they are from a North American who has been in that country in our industry for several years, and he certainly should know more about the situation from a practical standpoint; our own viewpoint, we must confess, is largely academic and probably colored by the New Deal's optimistic propaganda on developments "South of the Border." With some slight changes, to safeguard the author's anonimity the letter follows:

"I don't often get the urge to write to the Editor. I think this may be the third time in my life; but the April ROCK PRODUCTS just came and it gives me much food for thought. Magazines now take about thirty-five days to arrive here, they say it is the war.

"Maybe it is because I am so far away; I live about one thousand miles from Buenos Aires; or maybe it is because there is no other American or an Englishman on the payroll, that I seem to have a somewhat different slant from yours. Who knows?

This part of Argentina is about where our Tennessee and West Virginia mountaineers were thirty-five years ago; eighty-five percent of the men sign the payroll with the thumb print. Around and south of Buenos Aires is another question. Of the 12 million people in Argentina six million live in the Buenos Aires area. Who do you think gets the gravy from the "politicos?" We guys in the stix?

"Well, what am I driving at then? Just this: in your editorial you say, "For example there undoubtedly will be a strenuous highway building era in Central and South America, etc." Will there be? I doubt it. Already on the books of the Government there are millions of pesos for road building but in the Treasury there is not one peso of this fund. The United States has loaned millions to South America, but if they want that money spent as they think it should be, they will have to send men here to administer it. Don't worry, they will never be paid back; to a large extent the Argentines are highly amused that the money was loaned to them, and they look on us as fools for having done it.

"Believing that they are going to strike oil here, eighteen months ago they decided to build one kilometer of road, to be black-topped when the new Government refinery went into operation. One kilometer is ⅝ of a

mile, but already three contractors have gone broke and the fourth is well on the same road. The equipment is handed from one to the next, about eight wheelbarrows, eight shovels, eight picks, one broken down steam roller and six men.

"The road is part of the National Highway from Buenos Aires to, say, Seattle, Wash. The terraplane is, in grand part, about four inches of mixed clay and loam and then, judging by a well we drilled through it, 150 ft. of the best natural road building sand and gravel mix I ever saw. All they have to do is dig it from the side of the road and place it. But—eighteen months and the 5/8 of a mile is still incompleted. At that rate, without American contractors, how long will it take to pave the road to Buenos Aires?

"But I think I see your loyalty. Further ahead in the editorial you say, "The President has already placed before Congress, etc." Now I am a Roosevelt hater, but right now is no time for that and anything I say is to boost him, and even Eleanor, too, but if in eight years of peace he has been unable to accomplish anything, how will he ever handle the post-war period? I shudder to think of it.

"So much for the editorial, now 'Dear Subscriber' facing page 28. 'Louisville, Ky.: Gosh, is this town humming.' Isn't the word rather 'buzzing?' It takes me back to '18 when as a married enlisted man, earning $30 a month, less $7.90 for insurance, etc., the Ordnance Dept. dumped me into Muscle Shoals. Bread 25c, eggs $1.25 doz., one steak $2.50, and house rent! Yes, it was humming, but when the Armistice came! So I just fear your hopes, much as I would like to concur, of no post-war slump, are in the present parlance, 'wishful thinking.' I just can't see it as prosperity, how about it?

"Now, how about the 'Good Neighbor' policy? Remember, I write from northern Argentina; it has made them hate us. Do you want to have some one lend you money you didn't ask for; then every time he sees you, tell you what a swell guy he was to do it? Do you think for one minute they will buy American products with that money if they can buy elsewhere? First of all, our prices are too high; and, secondly, they don't want us to get our money back. A lot of this is our fault; in three years one American salesman has called here, and he called only because it was a combined business and pleasure trip. A local contractor brought me the catalog of an American concern selling steel bins and batching plants. He had written them in Spanish, saying he knew no English and would they please reply in Spanish. Did they? They did not, they wrote in English and did not even answer the man's questions. Sure, his reaction was just what yours and mine would have been, and he told everyone he met what a lousy outfit they are. If I told you who it was you would say I was a damn liar.

"As I see it, we must send salesmen here who talk Spanish, know something of the Latin temperament, and not once in three months say, 'In the States we ——.' My idea would be this: send key men, real sales managers from the States, preferably, of course, men speaking Spanish, and build the sales crew of natives. I would be against taking young men from here to the States for training, because they unconsciously pick up our habits and it works against them. I have seen it time and again.

"Due to the Hollywood influence, they all want to learn English. This I think, would be an incentive for the good ones to join up with American concerns. It is a paradox; they hate us, but they all want to go to the States. It seems to me that good relationship would come fastest if Argentines were working for American firms. Our ideas of how to treat help are so different from theirs; we believe, in great part, in the square deal, while here the reverse is true, so if you have some high class young fellows on the road for you, all enthusiastic about their product and the American way and still they are the children of the country, the seed must grow. We shall make small progress until we study the Latin and learn to do it his way, until such time, if that time ever comes, when he likes our way best.

"I enclose two clippings from the *Buenos Aires Herald*. The smaller one seems to carry out what I said in the paragraph above. If the film importer had taken time to think, or known the people, he never would have brought the film in. None of us can stand ridicule. [He refers to rejection in Buenos Aires of the movie 'Argentine Nights.' —The Editor.]

"The other clipping hooks in to some extent with what I have said, but you will note that while we are to pay two-thirds of the cost, nothing is said about Administration. [This clipping reports the appropriation of $20,000,000 by the United States for building roads in Central America.—The Editor.] And there is the joker. Should this come to pass it won't be funny to ride over the partly completed road, being made with American money, and find nothing but foreign equipment. But that is what it will be unless steps are taken to give American manufacturers an even break.

"No good neighbor policy can succeed if one party feels superior to the other and lets the second party see he feels that way.

"Of course, this has not all been written at one time and so may be a little incoherent in spots, but it may give you a slant you did not have before and none of us is ever hurt by another's view of things."

ADVENTURES OF SUPER DAN, THE SUPERMAN

Hints and Helps

★ FOR SUPERINTENDENTS ★

Emergency Tanks for Water Measurement

A NEPTUNE WATER METER in the water line accurately controls the measurement of mixing water in the ready-mixed concrete at Campbell Coal Co.'s new plant in Atlanta, Ga. This is a central mixing concrete plant and is ordinarily operated as such, with infrequent deliveries by transit mixers, using a chute from the overhead weigh batcher to bypass the stationary mixer.

As an emergency precaution, in the event of a meter failure, two 75-gal. mixing water tanks taken from Jaeger transit mixers have been

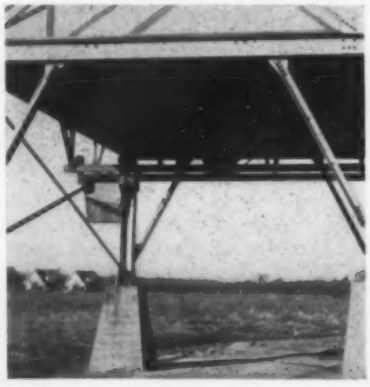
Transit mixer water tanks serve in emergency as water measuring equipment in the batching plant

mounted above the location where mixer drums are spotted in receiving dry-batched aggregates and cement. These tanks are calibrated and are kept full from the regular water line, which is fitted with hand valves. Thus, if the regular meter should fail or be cut out for repair, water can be accurately measured and concrete of correct proportions be delivered in transit mixers operated as such.

Truck-Loading Hoppers For Two Heights

ILLUSTRATED herewith is the type of truck-loading hopper used for loading trucks at a new eastern sand and gravel plant.

The bins and roadways are designed and built to accommodate trucks from the smallest to the largest sizes. Headroom is 11 ft. 6 in. under the hopper above, which permits loading large, high trucks. On the left is an auxiliary extension to the hopper, which is moved into place beneath the main hopper in loading small trucks. The purpose is



Auxiliary extension to main hopper discharge slides into place for truck with low body

to prevent bouncing of the gravel and the spillage in loading with too high a drop.

Photoelectric Relays Control Concrete Mixtures

INSTANTANEOUS CONTROL of concrete batching and the weighing out of the proper proportion of water has now been introduced to the ready mixed concrete business. All operations are now becoming automatic, and there is little opportunity for error when the adjustments are properly made for the job.

In one of the accompanying illustrations, a cement scale is shown with the scale beam in raised position exposing light source to operate a G.E. photoelectric relay in concrete mixing plant. The other illustration shows the automatic batching control room of the Cranford Co., Brooklyn, N. Y. The photoelectric relays are mounted on the scales. Another application, not illustrated, involves the use of photoelectric relays to operate a solenoid valve for the automatic cut-off on the liquid-weighing application.

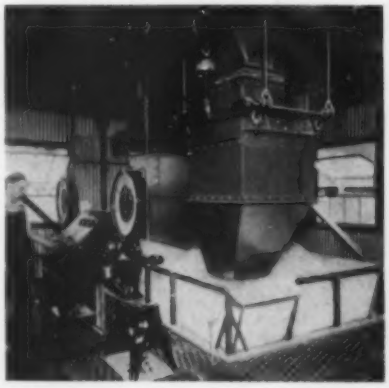
General Utility Truck for Heavy Lifting

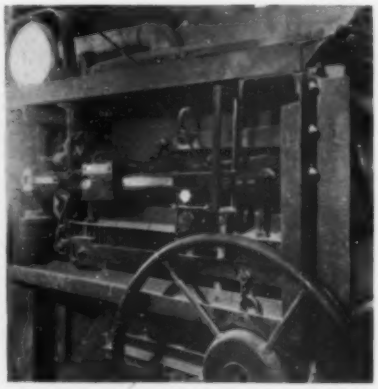
AN old 3½-ton chain drive AC Mack truck has been converted into a portable hoisting machine of great practical value to Campbell Limestone Co., Gaffney S. C. This truck has been fitted with a 20-ft. steel boom and two winches driven from the truck power take-off for lifting and handling heavy motors and machinery parts. One winch is wound with the cable for lifting the load

Old truck fitted with hoist to handle heavy machinery. Note shell of hammer mill being removed to replace hammers

and the other operates the hoist boom in a vertical plane.

In this plant, all the heavy motor drives and heavy machinery are located on or just above ground level and can be handled by this truck. The truck backs up to the equipment involved, and can push the end of the



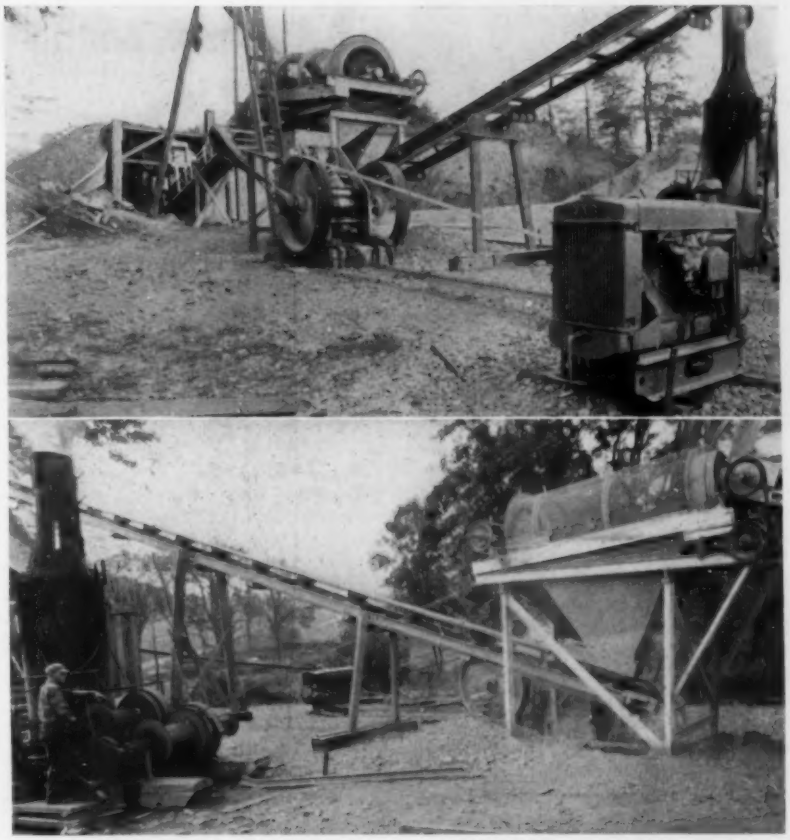


Left: Automatic batching control room in the ready mixed concrete plant of the Cranford Co., Brooklyn, N. Y. Right: Cement scale with scale beam in raised position exposing light source to operate photoelectric relay

boom through doors or under ordinary superstructures to get to the equipment.

Handling capacity is limited to one or two-ton loads but as high as a 5-ton load can be lifted and moved, with the boom in a nearly vertical position. The accompanying illustration shows the important kind of work that this truck is capable of doing. It may be noticed that the heavy top of an agricultural limestone pulverizer is removed for insertion of new hammers and replaced on its fittings without any lifting effort on the part of the men. A job such as replacing hammers is done every 50 hours, to illustrate how often heavy parts must be lifted and handled.

Recently, when a crusher was shipped to a nearby siding, this truck was backed up to a railroad truck loading ramp and the heavy crusher parts were placed on a large flat bed truck for delivery to the plant. According to H. T. Dill, plant superintendent, who conceived the idea and built the apparatus, this truck is used to do many odd jobs and comes into action nearly every day on some kind of job. The driver is an employe skilled in operating and handling the truck.



Above: Crushing and scalping unit looking toward field hopper. Below: Revolving scalping screen and steam hoist to operate slack-line cable bucket

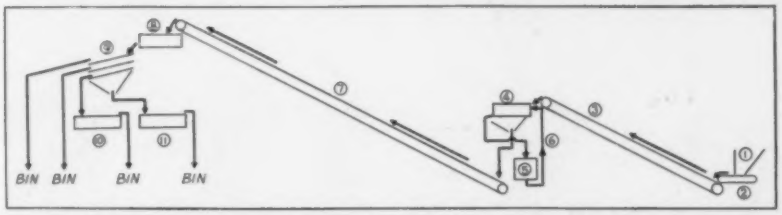
Simplest Possible Plant

PORTABLE SAND AND GRAVEL plants on wheels have become so big and so much in evidence that producers may overlook the possibilities of simple non-portable plants, for either temporary or permanent operation. Such a one was erected a couple of years ago near Mt. Gilead, Ohio, by the Morrow County Sand and Gravel Co., after designs by W. W. Williams Co., Columbus, Ohio.

Overall view of screening plant showing primary units in the background

The sketch and photos describe this plant. It has a capacity of 40 tons of washed sand and gravel per hour, two sizes of gravel and two of sand. The deposit is about 50 percent gravel. The crusher is close-circuited with the scalping screen. Excavating is done with a slack-line cable bucket, powered with a Stroudsburg steam hoist. Wash water is applied in the cylindrical scrubber, and over the triple-deck vibrating screen. A 12-hp. LeRoi gasoline engine furnishes power for the apron feeder, belt conveyor, and scalping screen. A 52-hp. Case gasoline engine furnishes power for the jaw crusher and bucket elevator. A 26-hp. Buda gasoline engine furnishes power for the scrubber, sand drags and vibrating screen. The 4-in. Gould pump for wash water is driven by a 12-hp. LeRoi gasoline engine.

H. V. Irey is president of the Morrow County Sand and Gravel Co.



Flow sheet of sand and gravel plant. 1—Field hopper. 2—Columbus apron feeder. 3—Chicago Automatic belt conveyor, 30-ft. centers. 4—Revolving scalping screen, 42-in. by 8 ft. 5—American Road Machinery No. 5-A jaw crusher. 6—Columbus chain bucket elevator, 21-ft. centers. 7—Columbus belt conveyor, 80-ft. centers. 8—Columbus 4- x 6-ft. scrubber. 9—New Holland 3- x 8-ft., triple-deck vibrating screen. 10—Columbus sand drag for concrete sand, 24-in. 11—Columbus sand drag for masons sand, 30-in.

Asphalt Railroad Ballast Being Tested

AN INVESTIGATION has been made of the use of asphalt in railroad track ballast by the American Railway Engineering Association based on a test section of track on the New York Central Railroad. The Asphalt Institute has reprinted bulletin No. 416 of the A.R.E.A., as number 37 of their Information series. The bulletin is of particular interest to aggregates producers as it gives complete details as to the types of aggregates and method of applying the emulsified asphalt. An emulsified asphalt-coated ¾-in. stone ballast was used with the voids filled with a mixture of emulsified asphalt and wet sand to seal the surface.

Automatic Control for

Close-up view of photo-electric control apparatus pointing into kiln through peep hole below burner pipe

BETTER CONTROL of rotary kiln temperatures and burning conditions is a trend in the portland cement industry. New specifications for standard types of cement and some of the special cements demand that closer control be exercised in burning clinker. In some cases a graphic record is required as proof that the clinker has been burned within a constant and narrow temperature range.

For these reasons and for other advantages, the trend toward more direct firing of rotary kilns continues, and a number of plants have become highly instrumentalized. Several plants have installed optical pyrometers in conjunction with other regulatory apparatus that goes hand in hand with unit coal mills to more positively control the kiln burning conditions. Uniform regulation of burning in rotary kilns is synonymous with better clinker, and therefore, better cement Better combustion conditions, through direct firing and instrumentation, are also insurance of efficient fuel economy.

A type of direct-firing unit mill, newly-introduced to the cement industry, and an entirely new principle of automatic regulation of firing through pyrometer controls are in operation by the Coplay Cement Manufacturing Co., Coplay, Penn. Unit mills have been installed on all its kilns along with a pneumatic system of handling the coal into the mill feed tanks that operates automatically. Highly instrumentalized operation has made coal-handling and firing practically fool-proof.

Kiln Arrangement

Coplay has four dry process rotary kilns, fired by natural draft, and recovers waste heat as preheat for the incoming kiln feed material. Three of the kilns are 9-ft. by 125-ft. and the fourth is 7 ft. 6 in. by 125 ft. Two of the large kilns are operated as a pair from a separate firing floor and the others are independently located, as far as firing is concerned. Until direct-firing was adopted a year ago, coal was prepared by rotary indirect fired dryers and centralized grinding mills, with a bin system and blower for injecting the coal into each of the kilns.

Unit mills were installed to gain the advantages already mentioned. It was desired to have firing equipment that would lend itself to the convenient use of automatic control features, and to eliminate a dust nuisance and the explosion hazard.

Four Unit Coal Mills of New Design

Four "impact coal pulverizers," manufactured by the Whiting Corp., have now been in operation for a year. They are of the hammer mill type, with the rotor turning on a single vertical shaft that revolves in two water-cooled ball bearings. Nine replaceable hammers to each mill turn at 1800 r.p.m. in a horizontal plane. Hammers and the wear plates are of manganese steel. Coal is fed into the mill by an integral screw feeder, heated primary air is introduced into the pulverizing chamber, and there is a separating chamber; the mixture of primary air and coal being injected through the burner pipe into the kiln, as one operation.

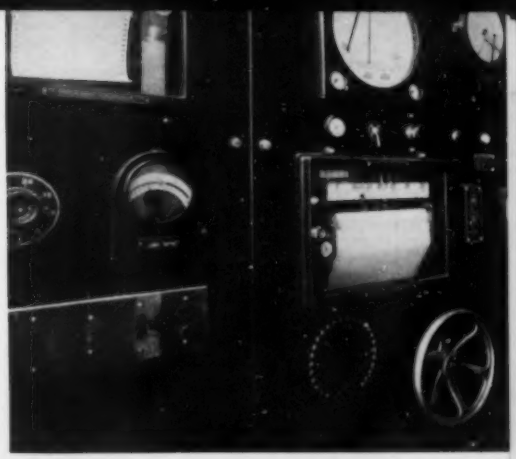
These mills are described as "flash grinding" mills, as the coal is pulverized and injected into the kilns just two seconds after it enters the mill. Another characteristic is that primary air need not be heated for operation of the mills. Primary air temperatures, from room temperatures to as high as 375 deg. F., have

One of the four dry-process kilns fired by impact-type pulverizers and equipped with photo-electric control equipment

Direct Fired Kilns

Unit mills installed on all kilns with pneumatic system of handling coal into mill feed tanks. Automatic regulation through pyrometer controls

By BROR NORDBERG



Partial view of electric control board with instruments to regulate kiln firing

been used, but as a rule, 150 deg. F. is the average to maintain the desired flame length.

Primary air is taken from the hot clinker conveyor tunnels under the kiln discharges and tempered by a damper at the coal mill inlet, with secondary air entering the kiln from around the kiln hoods and burner pipes.

West Virginia slack coals of various volatilities, with a top size of ¾-in. and an average B.t.u. value of 13,800, are pulverized through the mills to a fineness of about 82 percent passing 200-mesh. The coals ground do not require extremely fine grinding. Pulverized coal and primary air are injected as a mixture into the large kilns through 11-in. diameter straight steel burner pipes and through a 9-in. pipe into the small kiln.

Methods of Feeding Coal

Each kiln has a separate overhead steel feed bin of 50 tons live capacity, and the coal feeds out of the bins by gravity into open-top hoppers over the screw feeders. Moisture in the coal is not a serious factor, insofar as pulverization is concerned, but has caused handling difficulties in feeding to the mills, which have been corrected. Clinker is burned hard, at an average hot zone temperature of 2700 deg. F. but the flame length varies inversely as the degree of volatility increases.

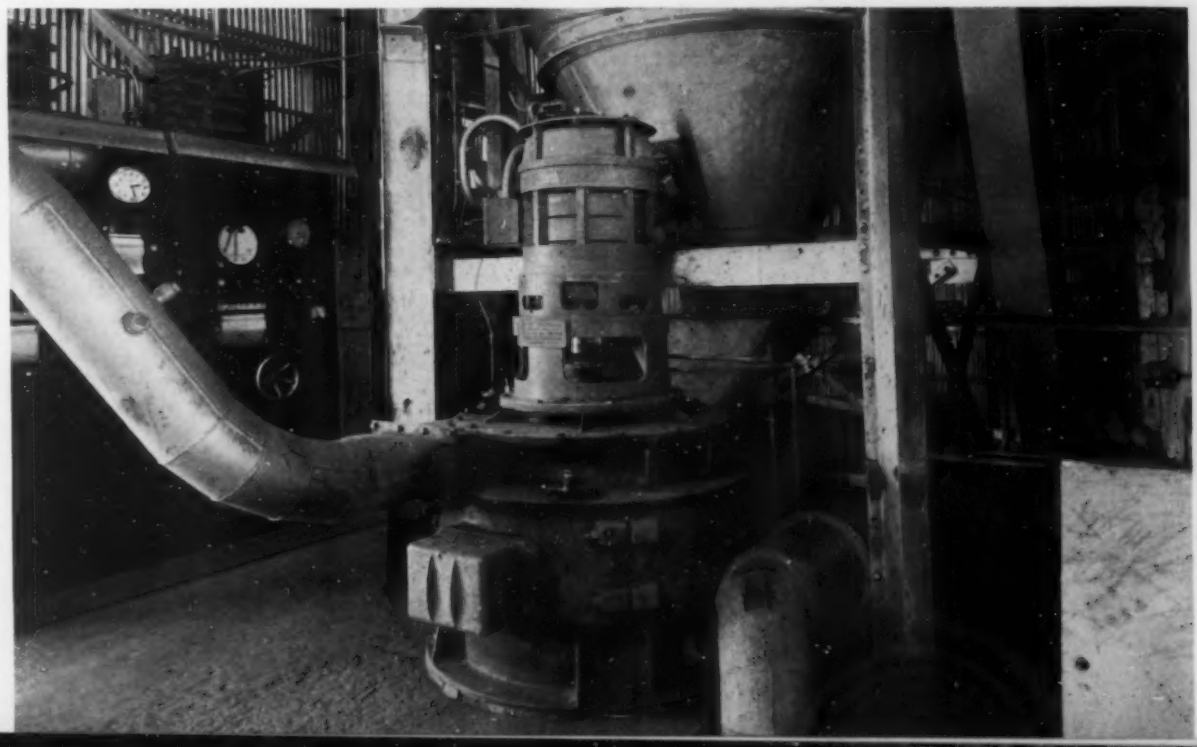
Each unit is driven by a vertical direct-connected Reliance line starter 2300-volt electric motor to make a compact pulverizing unit. A 30-A mill, of 3000-lb. per hour capacity, driven by a 40-hp. motor, fires the small kiln. The actual power imput averages 35-hp. Seventy-five horsepower motors drive the three larger size No. 40 mills which are rated at 4500 lb. of coal per hour, with an average power requirement of 65-hp.

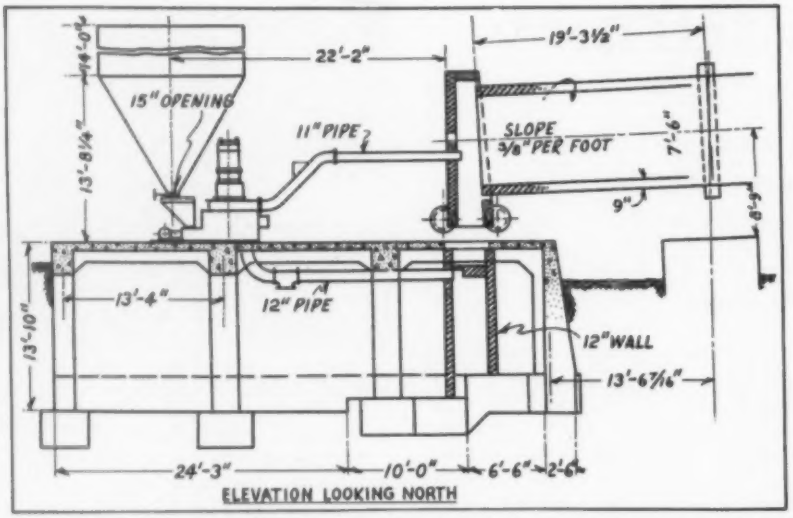
The first mill installed, the size 30A, is fed coal into a chamber near the bottom, the coal being raised by "ploughs" into the pulverizing zone, with the separation chamber above. Coal feed into the mill is regulated by a manual setting of the feeder gear reducer drive to adjust the kiln flame conditions.

Since this mill went into operation changes were made in the design that are incorporated into the three larger mills. The principal differences are that coal is fed into the top of these mills, eliminating the need for lifting "ploughs" which consume power, and wearing parts are more easily replaceable. Hammers, weighing 7½-lb. each, are replaced in less than ten minutes. New wear plates may be installed in less than one-half hour.

Because of the inherent characteristics of the "flash" or almost instantaneous pulverization, and injection of coal into the kilns together with the elimination of a coal bed in the bottom of the mills with the necessity of lifting ploughs, the power requirements are relatively low. Primary air temperatures can be very low, which was a factor taken into consideration in the selection of automatic firing

Impact-type coal pulverizer firing one of the kilns. Coal feed bin and hopper is in the background and the control board is shown to the left. Hot gases enter mill on right





General arrangement of kiln, hood and burning platform, showing a cross section of the coal mill installation

control equipment to regulate burning in two of the kilns. Lower primary air temperatures reduce fluctuating flame lengths in the kilns, which is an advantage in the operation of the pyrometers on two of the kilns.

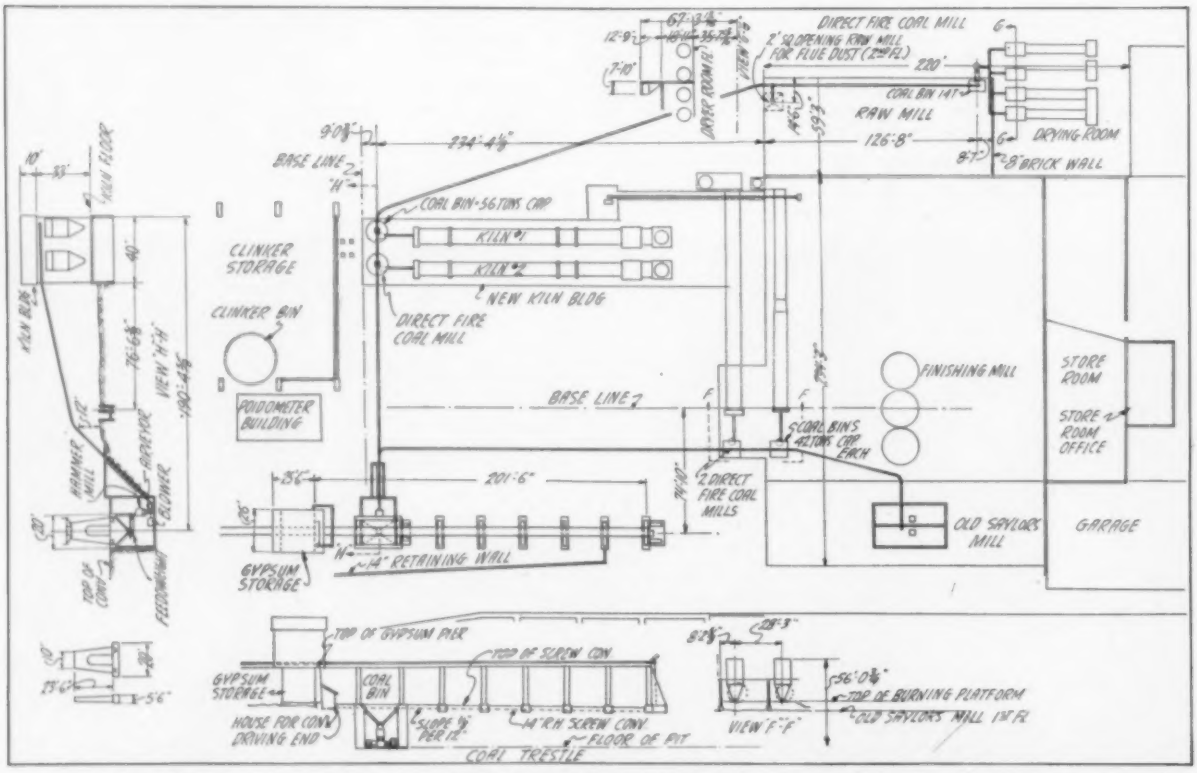
Automatic Kiln Controls

Manual controls on the coal feed are the means of regulating kiln firing in the small kiln and the one adjoining it, but the other two kilns, which operate regularly are completely automatic in operation, and a full record of performance is recorded on a large instrument panel.

Most of the automatic kiln controls used thus far in the industry operate on the principle of adjusting the rate of kiln feed to compensate for variations in burning. Coplay's kilns are equipped with pyrometers and instruments which measure temperature and control it through automatic regulation of the fuel feed rate into the unit coal mills.

These control devices were developed by the Brown Instrument Company with the Coplay Cement Manufacturing Company's technical staff. A "Radiamatic" tube is focussed through a hole in the firing hood upon the kiln lining in the hot zone, and a continuous record of the kiln temperatures is recorded on a Brown recording potentiometer on the control panel. Kiln speeds and the rate of feed of raw material into the kiln are held constant, in the use of this apparatus, but burning conditions inside the kilns are stabilized constantly by adjustment of the coal feed only.

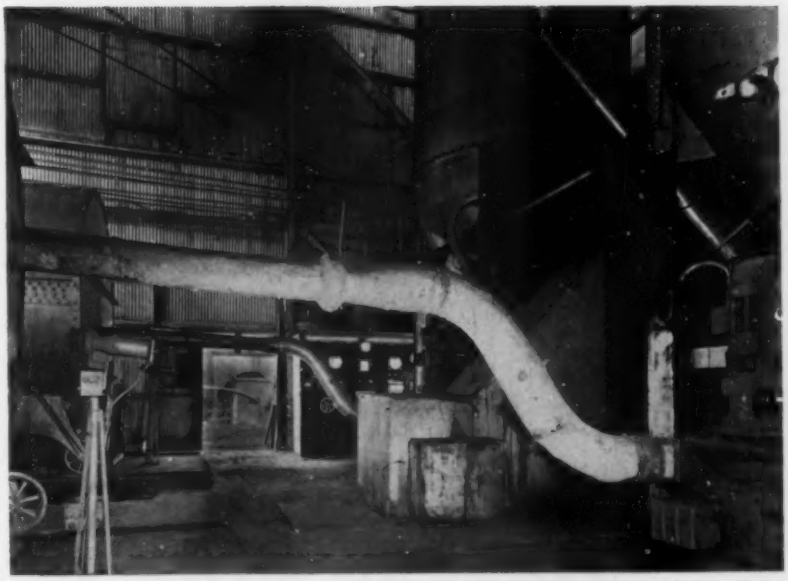
Each of the unit coal mills is driven from a Link-Belt P.I.V. gear reducer drive which is increased or decreased in speed at regular short time intervals through the action of an electrical relay in the potentiometer circuit. At intervals of 30 seconds, the potentiometer makes a contact which actuates the gear reducer speed if the temperature of the hot zone has varied up or down from the constant kiln temperature that the potentiometer is set to maintain in the kiln. At each contact made there is a time factor, in the operation of an electrical relay, which increases or decreases the length of time through



Layout of direct firing coal installation with relation to raw and finishing mill equipment. Elevation drawings show method of handling coal to the pulverizers

which the rate of feed coal into the mill is changed. This is adjustable and is a means of controlling how much the feed rate is changed at each 30-second contact made in the potentiometer.

Radiamatic control pyrometers focus, not on a single point in the kiln, but on a small area of the kiln lining, probably 6-in. square, depending upon how far back in the kiln the instrument is focussed. Thus, an average condition of temperature is recorded, which tends to offset variations due to a fluctuating flame or other conditions which might enter in. A glance at the kiln temperature chart shows an almost straight line at the desired kiln temperature. Kiln temperatures are held constantly to within 25 deg. F. of the pre-determined mean temperature. Sensitivity of the instruments makes it possible to almost instantaneously compensate for changes that affect kiln temperatures, such as fluctuating kiln feed.



Overall view of direct firing coal mill installation, showing overhead coal feed bins, and pipe leading to kilns equipped with automatic controls

Coal Handling

Tempering of the primary air in the hot air ducts coming from the clinker conveyor tunnels is also automatic on these kilns. A Brown temperature recorder is electrically connected to automatically close or open the cold air damper to maintain the desired temperatures of the air-coal mixture injected into each kiln.

The entire coal-handling department has been re-built for pneumatic conveying of coal into the unit mill feed tanks. Coal comes in by rail and is dumped into open storage of about 3000 tons capacity. Various types of slack coal are used, of about 13,800 B.t.u. average heat value. Some of the coal runs up to 2-in. size which necessitates the occasional use of a coal crusher since a feed material of ¾-in. maximum size is more ideal for the unit mill feed.

In the storage area is a hopper 18-ft. square from which coal is fed out to the pneumatic conveying system. The hopper, holding a carload of coal, has sides tapered at 60 deg. toward the bottom discharge.

Coal from the hopper is fed out into the handling system by a 20-in. pivoted Merrick weightometer which continuously weighs the coal as it is sent to the unit coal mill feed bins. Conveying is done by a Fuller airveyor system of transportation through 10-in. diameter pipes.

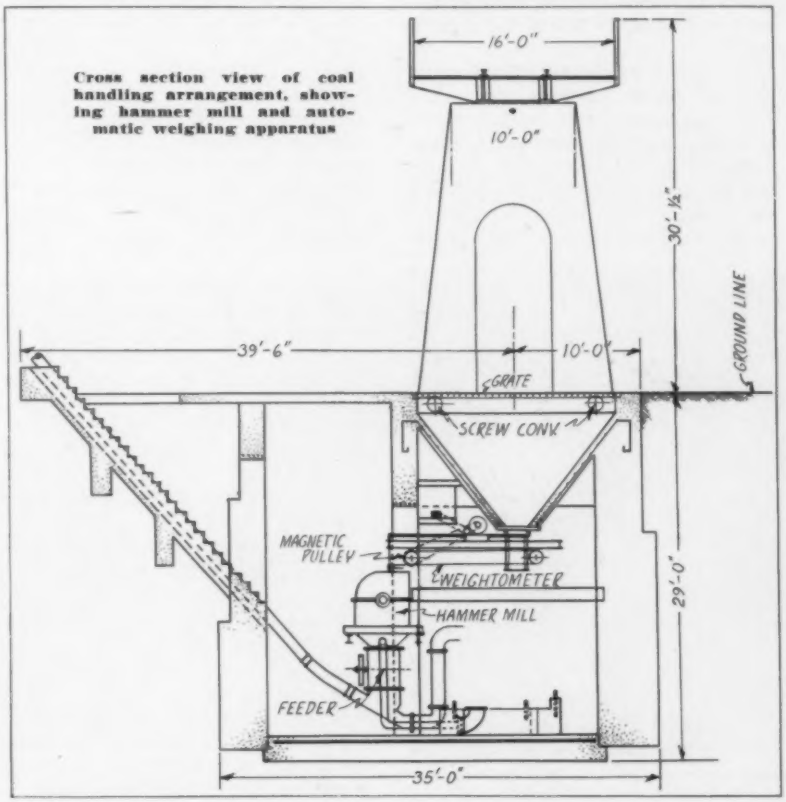
Coal is first passed through a type A Jeffrey hammer mill crusher and then into a 16- x 28-in. fully enclosed Fuller line charger. The crusher has the grate bars removed and all the coal passes through the crusher to break down the occasional big pieces. Air for transportation through the pipelines is furnished by a low pressure type RS, Roots-Connersville blower. Separate 10-in. diameter lines carry the coal into each of the two separate kiln buildings with a valve connection at the juncture of the lines near the source of feed.

Capacity of the conveying system is 40 tons per hour, and its operation is controlled from a central electrical panel which has the necessary push button starters, ammeters and a diagrammatic sketch of the connecting lines to the four 50-ton coal mill bins and one serving the stone dryer.

Each bin on the diagram has a green and a red light that tell the operator at a glance which bins are

(Continued on page 92)

Cross section view of coal handling arrangement, showing hammer mill and automatic weighing apparatus



General view of screening and crushing plant which rises 100 ft. above railroad track. Supplementary storage bins for chips, to the left, is for the convenience of truckers

Making Fine Products

Rebuild Blue Ridge Stone Corp. plant, replacing rotary with vibrating screens and adding more reduction crusher capacity

By BROR NORDBERG

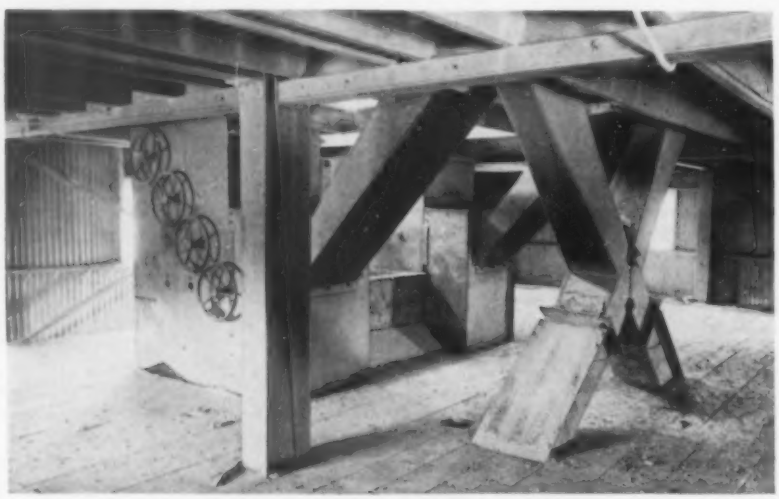
TRENDS are all in the direction of more and varied fine stone products, necessitating larger capacity for reduction, and considerably greater flexibility in producing ten or more grades of material at the same time. New outlets are being found for thousands of tons of so-called waste material which formerly cluttered up the premises.

A good illustration of fitting production into the modern scheme is Blue Ridge Stone Corporation's plant at Blue Ridge, Va., in mountainous country 12 miles east of Roanoke, Va.

It was started as a railroad ballast plant equipped only to ship by rail and the fines, or waste, were given away.

As ballast markets declined, commercial stone assumed more and more importance and today it is the principal market. Progressive adaptation of producing facilities to meet the demands for new products meant the constant addition of equipment, by-pass chutes, etc., to the existing main structure, resulting in a complicated plant layout.

All this was simplified a year ago when the entire plant, except the primary crushing end, was rebuilt into one that has plenty of flexibility and capacity to produce finer products. Several older type elevators and conveyors were scrapped, revolving screens were replaced by vibrating screens which have more capacity for finer materials and some changes were made in reduction crushers. Its layout could be described as simple considering its flexibility.



Well organized system of chutes for filling either of several bins or feeding either of several reduction crushers. Screens are overhead

Gravity for Conveying

Gravity is the principal conveying medium as the top of the plant is some 120 ft. above the main line of the Norfolk and Western tracks located under the bins. At the same time more facilities were built into the plant for shipping by truck and for storage of chips. Capacity is 2500 tons in 10 hours which is the same as before.

Ballast and the regular run of commercial stone do not require washing and are produced in the main plant. Minus $\frac{3}{8}$-in. stone is put separately through a washing plant to produce stone sand, top dressing material and other fine products. All this material was wasted, insofar as regular market channels are concerned, until five years ago, and represents about 20 percent of the total stone handled.

Stone sand is dewatered in the screw conveyor, left, and is placed into open stockpiles by belt conveyor

The stone is a blue, siliceous dolomite that is quarried on two levels about ¾ mile from the plant. Blasting is done on 45-ft. benches using 5⅝-in. well drill holes for the primary shot followed by the usual jackhammer drilling and secondary shooting.

Marion 1¾- and 2-cu. yd. steam shovels load about 10 tons of stone into side-dump industrial cars which are hauled in a train of six to the crushing plant by steam locomotive. Two locomotives are needed to negotiate a six percent grade out of the quarry. At the plant, the cars are tilted by an air hoist into a No. 12-K Allis-Chalmers gyratory crusher which breaks the stone to 6 in. top size. A bucket elevator discharges this product into a 60-in. by 12-ft. revolving screen which is a scalper. Minus ⅜-in. stone is put into a bin by a belt conveyor. When the stone is thoroughly dry, everything from ⅜-in. to 6-in. is dropped into a No. 8 Allis-Chalmers gyratory crusher and elevated to the finishing screens.

If the stone is damp or wet and contains foreign material a ⅜-in. to 1½-in. product from the scalper is diverted from the secondary crusher to a belt conveyor which feeds a 4- x 10-ft. Tyler-Niagara double-deck vibrating screen. Normally, ⅜- to ¾-in. and ¾-in. to 1½-in. products are sized on this screen which comprise base or ballast rock, in part, for certain specifications.

Screening and Crushing Methods and Equipment

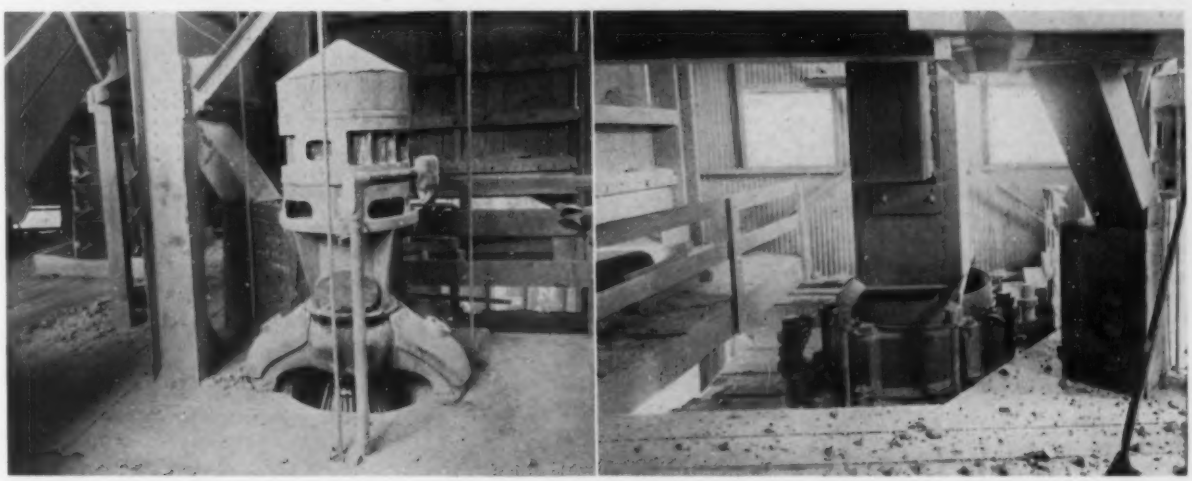
A single vertical Link-Belt bucket elevator, 115-ft. centers, serves to elevate the discharge from the secondary crusher and from the several reduction crushers to the screens overhead. The elevator has special manganese wear surfaces on the bucket lips, and is driven by a 60-hp. motor and Link-Belt silent chain drive. Its capacity, which is often reached and exceeded when the bulk of the stone produced is in the smaller sizes, is 300 tons per hour.

Screening is done over two 4- x 14-ft. triple-deck Tyler-Niagara vibrating screens at the top of the plant, and the fine screening on the next level over two similar 2-deck screens. Ballast or road base stone are taken off the top screens or the oversize is put through a 4-ft. Symons cone crusher and re-elevated to the screen.

Stone retained on the second deck of the top screens can be diverted either to the 4-ft. cone crusher, to the No. 8 crusher or to a No. 7 Newhouse crusher. Between the second and third decks, a finished product, ordinarily 3/16- to 1⅛-in., is taken off or all the product passing through the top two decks can be put over the lower screens. Here, Virginia No. 9, No. 12 or No. 11 stone which are respectively ¼- to 1-in., 10-mesh to ⅜-in. or ½- to 10-mesh are sized. Further reductions are made as desired through a 3-ft. shorthead Symons cone crusher. The bottom decks of the lower screens have 8-mesh cloth and the throughs enter a dust bin as agstone.

Crushers have steel-lined surge boxes over them to regulate their feed, and all material is discharged into the common bucket elevator. In producing a bulk of finer sizes, crowding the ability of the reduction crushers to handle the load, the pressure is relieved by diverting some of the stone through the No. 8 crusher.

(Continued on page 37)



Two types of reduction crusher. Left: One of the gyratory type reduction crushers. Right: Fine reduction crusher used in making chips and other small sizes

Wider Markets For Lime

Convention sessions at Hot Springs, Va., well attended; officers are reelected

By NATHAN C. ROCKWOOD

TWENTY-SIX lime manufacturing companies were represented by 55 persons at the 23rd annual convention of the National Lime Association, Hot Springs, Va., May 27-29. Some 31 others attended, mostly representatives of machinery and supply firms and professional men interested in lime manufacture.

All the officers were reëlected as follows: K. L. Hammond, chairman of the board of directors; S. Walter Stauffer, president; W. Vernon Brumbaugh, secretary and assistant treasurer; James H. McNamara, treasurer; Roma F. Medford, assistant secretary. The executive committee, in addition to Mr. Hammond, comprises: Henry La Liberte, Fred Witmer, B. L. McNulty, Reed C. Bye.

The directors are elected by districts by the members in those districts. They are, District No. 1, C. C. Loomis; No. 2 (no election yet); No. 3 (no election yet); No. 4, J. A. Dunaway; No. 5A, Wilfred W. Sprague; Fred Witmer; No. 5B, Russell Rarey; No. 6, Gordon W. Hughes; No. 7 (no election yet); No. 8, C. E. Brady; No. 9, Henry La Liberte; No. 10-11, K. L. Hammond; No. 12, Paul Sunderland; No. 13, Cecil R. Haden; No. 14, Eric A. Johnson; No. 15 (no election yet).

Structural Lime

After the usual reports on association business was a session of five papers and talks on lime as a structural material, emphasizing the progress of continuing research.

HOWARD R. STALEY, assistant professor of building construction, Massachusetts Institute of Technology, reported progress of research on the use of lime in portland cement concrete. His experiments had to do with replacing a proportionate amount of cement with hydrated lime in concretes made with three different ratios of cement to sand and gravel. Cylinders 6 x 10 in. and beams 6 x 6 x 24 in. were tested for compressive and transverse strengths.

Results are difficult of comparison because there is no accepted measure of workability. However, using what is known as the Voss plastometer for measuring the workability of laboratory mixes, a smaller slump was obtained in every instance, using lime, than with cement alone, with the same workability. Lime was substituted for cement in 25 lb., 50 lb. and 75 lb. proportions per cu. yd. (500 lb. of cementitions material per cu. yd.)

Some of the results shown were that the higher the water-cement ratio, the more strength was added by the use of lime. With 8½ gal. of water the increase from the use of lime was 28 percent, tested at 7 days. These early gains in strength fall off somewhat at greater ages; at 28 da. the 8½ gal. concrete with lime showed only 10 percent increase over the straight portland cement concrete. Briefly, the substitution of lime for cement up to 10 percent of the total cementitious material appeared to remedy the bad effects of using too much water in the mix. It also helped maintain the strength of the concrete when cured under too dry conditions.

The effect of lime substitutions on other properties of the concrete, such as wear, did not appear important. Apparently, it did not make any difference whether the lime was the high calcium or the dolomitic type. Lime substitutions also helped decrease the permeability of the concrete.

DR. L. S. WELLS, National Bureau of Standards, spoke extemporaneously and "off the record." The substance of his remarks was that lime as a structural material needed modernizing. For example, many of the dry hydrates on the market are not as plastic as all lime is supposed to be. The result is that for use with other products, or applications, where lime is wanted to give plasticity, substitutes are gaining a foothold, including modern plasticizers. Some hydrated limes, he said, require from 8 to 10 hours of soaking before they can be used effectively.

High water retentivity is a most desirable property, but all dry hydrated limes do not have this property. Putties made directly from quick lime are often best. Hydrated limes (dry) should become plastic immediately after wetting, if they are to meet the needs of modern industry. For white coat work, however, limes can be too "plastic".

Dr. Wells expressed the opinion that lime manufacturers were neglecting study and possible improvement of their product; that they were overlooking possibilities in the manufacture of hydraulic limes. He spoke of the special properties of pressure hydrated limes which made them applicable in the manufacture of cold-water, lime-cement paints.

In conclusion, Dr. Wells emphasized the value of research; he said wherever there had been concentrated efforts, there had been results.

WALTER C. VOSS, professor of building construction, Massachusetts Institute of Technology, speaking on "The Future of High Lime Mortars," said there was a growing consciousness that something was wrong with mortar materials used in the recent past. Basic essentials for satisfactory performance of mortar, he said, were:

Starting with Victor J. Axbe, in the foreground, the following may be recognized: Irving Warner, D. E. Washburn, and Jim Murray

1

2

3

Convention Candid Shots

Some close-up shots of our good friends in the lime industry: 1—Henry La Liberte, Cutler-Magner Co., Duluth, Minn. 2—John Moores, Moores Lime Co., Springfield, Ohio. 3—Jim Murray, Warner Co., Devault, Penn. 4—Fred Witmer, Ohio Hydrate & Supply Co., Woodville, Ohio. 5—H. C. Laird, Ohio Hydrate & Supply Co., Woodville, Ohio. 6—G. I. Purnell, Warner Co., Bellefonte, Penn. 7—Phillip L. Corson, G. & W. H. Corson, Inc., Plymouth Meeting, Penn. 8—John C. Best, National Gypsum Co., Buffalo, N. Y. 9—Prof. Walter C. Voss, Massachusetts Institute of Technology, Cambridge, Mass.

4

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9

Chas. Rarey, son of Russell Rarey

(1) plasticity; (2) high sand carrying capacity; (3) strength of bond; (4) chemical reconstitution (involving water-tightness); (5) durability.

These characteristics are determined by the nature of the ingredients; advantages are to be obtained by proper blending to get the best properties of both portland cement and lime. Sand-carrying capacity is a big factor, but some of the new lime hydrates have almost too much, which isn't desirable; there should be both minimum and maximum limits to sand-carrying capacity of a mortar cement.

Durability of mortars, Prof. Voss said, had to do with their resistance to freezing and thawing; the cause of most failures is really unaccounted for; in the case of walls above ground level there is no evidence that high lime mortars are less resistant to weathering than all portland cement mortar.

One objection to modern mortar cements is their unknown constituents. Prof. Voss contended the shipping container should carry a label with the kind and amounts of such constituents. He concluded his remarks by emphasizing as he has many times, that strength of mortars is far from being the sole criterion of quality.

JOHN A. ROBERTSON, chief engineer, construction department, National Lime Association, discussed "A Practical Approach to Architects and Engineers," emphasizing the value to the lime manufacturer of having his salesmen contact the architect and engineer direct, for the purpose of broad-gauge promotion of the general product. This is a kind of missionary work, in which the average salesman needs practical education.

Since statistics show that approximately three-fourths of all construction goes through the hands of architects and engineers, it pays to cultivate them. The dealer can not be depended upon to promote sales of any one product.

To contact professional men successfully, Mr. Robertson said, the salesman must present facts and reliable information of value to their practice. The salesman's job is to promote, encourage, stimulate and to dignify the use of lime. To dignify is important; consequently one should avoid "knocking" other products.

Also, the producer and his salesman should know more about their own product than any one else and should give architects and engineers the benefit of this special knowledge. The customers' interests should be stressed; and the calls should be frequent enough to cultivate personal relationships.

Mr. Robertson said each presentation should be varied or adapted to the individual cases, but first things should come first. He then went into detail as to how to introduce and explain the points Prof. Voss has brought out many times in talks and papers on the advantages of high-lime mortars.

D. E. Washburn in a contemplative pose

DR. G. L. CLARK, professor of chemistry, University of Illinois, presented an outline of a paper prepared by himself, P. M. Bernays, and Victor J. Azbe on "Progress in Structural Investigations on Lime." Dr. Clark and his assistants are making fundamental research on the constitution of lime and hydrated lime by means of X-ray analysis and the electron microscope.

The most interesting thing reported was that calcium and magnesium oxides made under special conditions have special properties not obtained under normal manufacturing conditions. For example Dr. MacIntyre of the University of Tennessee has made (in the laboratory) an extremely active form of dolomitic lime by calcining dolomite in an atmosphere of steam at 700 deg. C.

Another interesting development is that the new pressure hydrated dolomitic limes may contain a hydrated carbonate of magnesia ($MgCO_3 \cdot 3H_2O$). A magnesium hydrate made quickly at low temperature is particularly reactive, and Dr. Clark hinted that this kind of a hydrate had important national defense uses.

However, the recent attempts to hydrate the magnesia in dolomitic limes may fail of their objective by spoiling the calcium hydrate in the process. (Enough is known of the experience of lime manufacturers to show that variations in the process can produce vastly different acting hydrates.—THE EDITOR.)

Agriculture-Sewage-Lime Manufacture

J. W. WHITE, professor of soil technology, The Pennsylvania State College, gave an historical resumé of the use of lime in agriculture in his state (45 percent of all *lime* [not limestone] used in agriculture in the U. S. A. is used in Pennsylvania alone. The continued fertility of the state has largely depended on the use of lime.

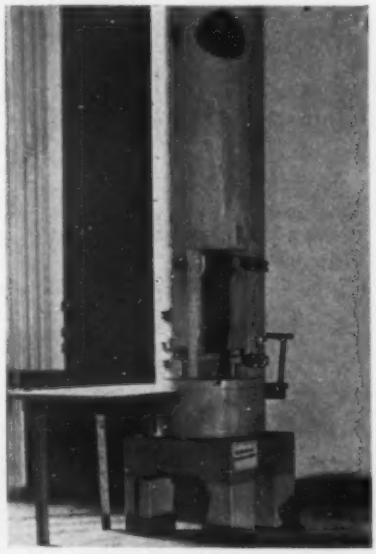
However, Prof. White is not an advocate of lime vs. limestone; both answer the purpose. The special value

Russell G. Greeves and L. E. Johnson having a chat

of lime (burnt and/or hydrated) is that small applications quickly overcome soil acidity, while limestone acts more slowly. He showed charts of soil surveys of the state and the lime requirements of different types of soils. In some instances soil yield had been increased as much as 350 percent by the use of lime. He said under present practice one could not afford to use commercial fertilizers without also using lime.

At the conclusion of Prof. White's remarks HENRY HUSCHKE, head of the agricultural department, National Lime Association, showed a new filmstrip produced by the Quality Lime Institute entitled, "Soil Liming." It is designed primarily for use in high school agricultural classes.

DR. WILLEM RUDOLFS, professor, department of water supply and sewage disposal, Rutgers University, gave the latest results of his studies on lime in sewage treatment. He prefaced his report by saying that at present half the



Model of the Azbe kiln shown at the convention

urban population of the United States has sewage treatment facilities; that this country had only begun to make progress; also there are large amounts of industrial wastes to be treated.

Dr. Rudolfs then outlined the different purposes lime served in sewage treatment: (1) to control reaction in sludge digestion; bacterial activity leads to acidity, which has to be neutralized; the lime required has to be rather quick acting; (2) in conjunction with iron salts as a coagulating agent; (3) for conditioning the sludge; the use of lime facilitates dewatering; (4) neutralization of industrial wastes.

The most interesting conclusion

From left to right: John Moores, James McNamara, with his back to the camera, Mrs. Paul Sunderland, Paul Sunderland standing back of his son

from Dr. Rudolfs' studies is the "astoundingly" as he termed it, different results with different limes, for no apparent reason. Specifications for lime for sewage treatment are rarely used; when specifications are used they are usually those for lime for water purification. He said it was curious how some limes worked satisfactorily in water treatment and not in sewage treatment, and *vice versa*.

Working with two high calcium limes picked up in the open market, one produced 25 to 30 percent more efficient results than the other. Some limes combine readily with the phosphates in the sewage, others do not. Theoretically, magnesium limes should be more effective than high calcium limes; in practice it doesn't work out that way. There is need, Dr. Rudolfs said, for answers to many fundamental questions, which only thorough-going research can supply. He thought there was possibility of improving some of the desirable properties of lime; anyhow, there is a large market for lime to be developed by research on sewage treatment.

Manufacture

Two papers on lime manufacture, by Victor J. Azbe, and by W. R. Cliff, have been abstracted. Mr. Azbe's paper will appear on the next page and Mr. Cliffe's paper will follow in a later issue.

Making Fine Stone Products

(Continued from page 33)

Hoppers beneath the several screens are equipped with hand-operated baffles to control the stream of various products to the several crushers and into one bin or another.

Eight plant bins over the railroad tracks hold 75 tons of stone each, which can also be loaded out into trucks. Additional storage and a means of blending and truck loading are provided by a new four-compartment steel bin of 240 tons capacity, located on higher ground where a new crushed stone road has been built for the convenience of trucks.

A single belt conveyor can take stone or a blend of stone sizes from either of the four bins adjacent to it and transfer to a belt conveyor filling the truck bins. This belt is 24-in. wide on 120-ft. centers. Chip sizes, used in a nearby bituminous premix plant, are ordinarily placed in these bins but blended stone may be similarly handled. Railroad cars are spotted on a natural railroad grade above the plant and allowed to roll down to the plant for loading.

In the wet plant, screenings are first put over a single-deck vibrating screen to reject a very small amount of plus ½-in. stone. This is wasted through a by-pass chute. Minus ½-in. falls on to a short belt feeder which drops it through a chute onto a 4- x 12-ft. Tyler-Niagara double-deck vibrating screen. Water is added in the chute to make the stone flow and is applied at 60 p.s.i. over both decks of the screen. The top deck is of two sections of 3/16-in. square openings and a third section of ⅛-in. cloth, and the bottom deck has slotted openings making a product equivalent to that made through ⅛-in. square openings.

A premix stone is produced by putting the stone retained on the top deck through two 16-in. screw washers. This material is between 10-mesh and ½-in. Stone retained between the screen decks is similarly dewatered in a screw washer to produce a top dressing stone which is 95 to 100 percent passing a No. 4 sieve and 10 to 60 percent through No. 10.

Material passing both decks of the screen are put through a twin screw washer where it is scrubbed, rinsed and dewatered to produce a stone sand. This product must meet a state requirement of 95-100 percent through a No. 4 sieve, 50-75 percent minus No. 20, 10-25 percent minus No. 50 and 0 to 6 percent through No. 100. The State of Virginia mixes 50 percent of stone sand produced to this specification with natural sand.

The spiral washers discharge into ground storage areas and are rehandled into storage piles or cars by crawler cranes.

J. L. Huff is superintendent of the Blue Ridge plant and A. L. Miller is plant foreman.

Center-Burner Fired Automatic Draw Kiln

By VICTOR J. AZBE*

AT YOUR CHICAGO MEETING last year there was a paper delivered in which I tried to portray what form a logical lime plant should take. You were led from the quarry through to the hydrating plant and all the various features that have been argued or illustrated, have been proven out in one plant or another. The paper, however, was generalized so it did not cover in sufficient detail the most important unit of any lime plant—*the lime kiln.*

What may have been considered good before the present era of labor cost, chemical standards, and severity of competition, is not good any more today, but there is a kiln—the only kiln developed in the recent period of industry's technical growth.

I am hesitant to call it the "Azbe Kiln," but I guess you will agree with me that there is justification in doing so, since most of my time during the last 20 years was given to its development. But there was great help from Lowell Andrew, my assistant of many years, and there were others, who, in the various periods of development, contributed greatly. To mention only a few, there were Hunkins, Warner, and Tothill, in the earlier days, to be followed by Johannes and Beckeman; then more recently, Henderson, Fulmer, and Robinson, to all of whom I will always be thankful.

The kiln embraces arrangements making possible the use of the maximum draft to obtain capacities two, three, and four times the normal. The draft may be induced, or forced; or through the combination of the two, balanced draft. It is this latter—a sort of push-pull application of mechanical draft—that makes spall kilns possible, the great possibilities of which we are now merely touching.

There are arrangements to get combustible into any section of the kiln, through both the center burner and side burners, controllable in amount. Double level firing was also successfully tried but with the present highly developed one level arrangement, this additional complication is ordinarily not necessary.

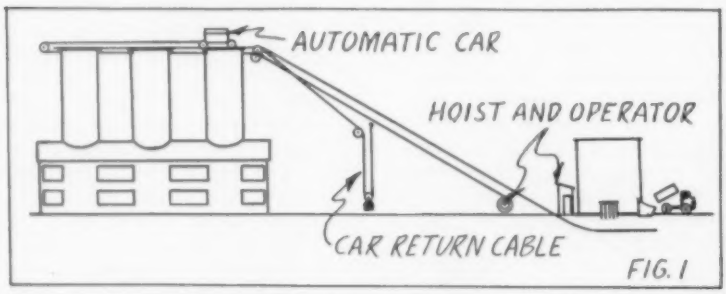
Special arrangements have been made for withdrawal of gases, for tempering of the hot zone, for effective cooling of the lime, for obtaining low terminal temperatures, and for complete accessibility of all kiln sections in the hot zone.

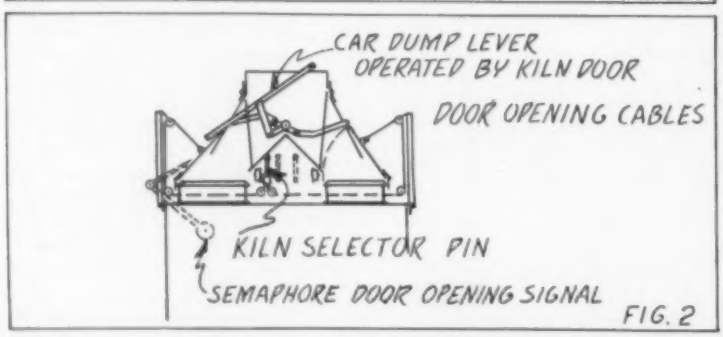
The latest, and now fully proven out development, is the mechanical draw. Mechanical draws were common on large mixed feed kilns as the burning could be regulated by proper distribution of coke, but were never successful on direct or gas-fired kilns. Their use is now being made possible because the kiln is adapted, by virtue of its sectionalized cooler, the center burner and proper side burners. If spall burning is practicable with intermittent drawing, then it will be more so with mechanical draw, as the kiln charge will be loosened and the flame penetrates more readily and distributes more evenly.

One Man Charges Kiln

High capacity induced draft kilns must receive stone continuously; if as much as one draw is made without charging stone, the kiln will suffer. For this reason always, when possible, kilns are built high enough so part serves as a thermally inactive stone storage zone. However, at times, high kilns just do not fit in; recently we reconstructed such a plant in which case a simple and adequate stone storage bin was located on the ground level, Fig. 1. From this one man charges the kilns. There is just this

* From a paper recently presented by Mr. Azbe, at the National Lime Association convention at Hot Springs, Va.





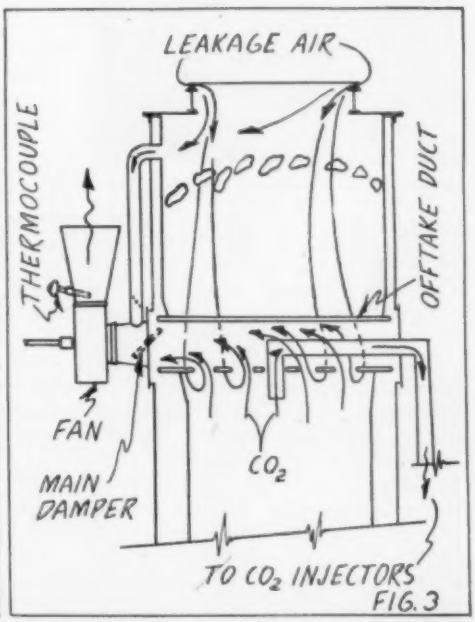


Fig. 1: One man charges kilns of this lime plant. Stone storage bin located on the ground level. Fig. 2: Dumping arrangement of stone charging cars. Fig. 3: Patented kiln storage zone with gas offtake duct

one man on the shift and he is on the ground level; there is no one on top of the kiln. The kiln doors and car doors open automatically. Although there may be many kilns in a row, by a simple arrangement he can select any kiln of the group for stone to fall in. The stone charging cars take different forms; the side or the double dump, details of which are shown in Fig. 2, complete with mechanism, and the side dump car.

The standard kiln has a storage zone, an expanded section within the kiln shell, holding enough stone to last through the night. The gases are taken off below this section, as shown by Fig. 3. The offtake duct is a heavy, special cast iron duct that will resist heat as well as the impact of the falling stone. On every draw fresh stone sinks down past the pipe and as this stone is cold, fan temperatures are equalized. While they never are as low as on ordinary kilns, they also never are as high, which is of decided advantage.

Fans are not made to stand the very high temperatures of the discharging gases from kilns that are charged only in the morning and afternoon.

The offtake pipe receives some air from leaks in the charging doors which can not be made entirely tight, but that, excepting for a little higher fan power, is not objectionable. It is even an advantage, as at times gases coming up a high calcium lime kiln are too hot for the fan, but this leakage air tempers them.

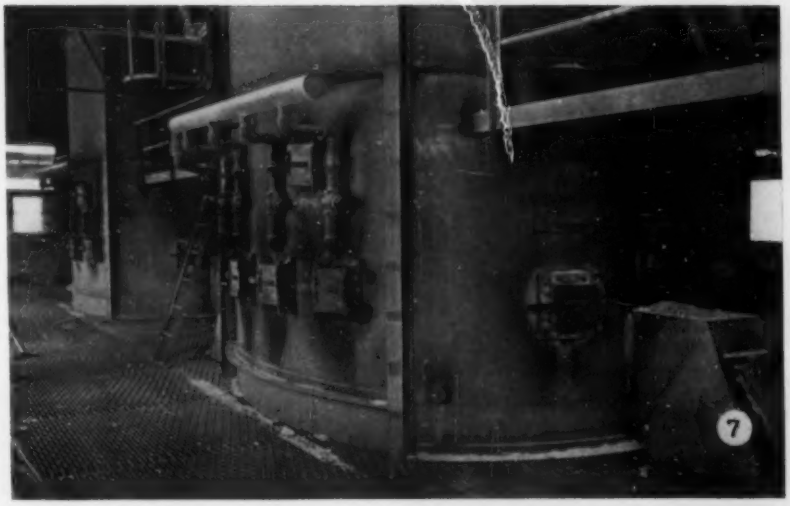


Fig. 7: Showing strategically located poke holes for hot zone accessible for trimming

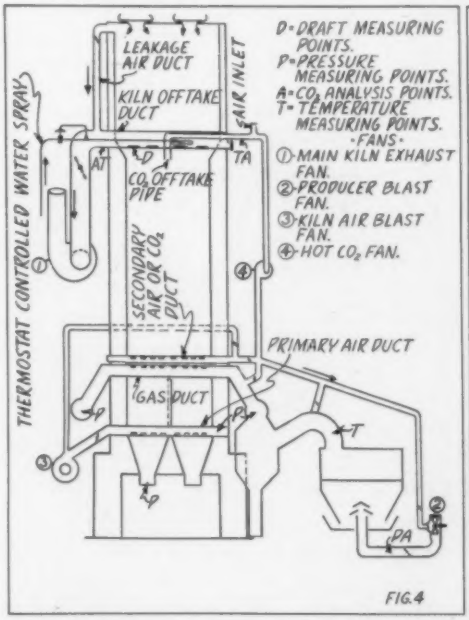
When some high strength CO_2 gas is needed for recirculation, to temper the heat of the hot zone, another pipe is inserted within the offtake duct with its inlet well below the point where top leakage air can reach. Thus high CO_2 strength, undiluted hot kiln gases, become available. These can be used in many ways and the gas circuits, when conditions demand, can become rather complicated, as shown by Fig. 4.

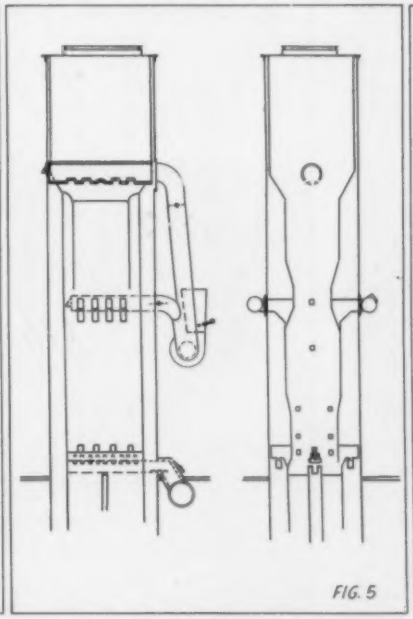
When the kiln is to be located in a soda or sugar plant, where the kiln gases, as well as the lime, are utilized in the process, then the leakage top air is not allowed to mix with the kiln gases and is intercepted and discharged by a separate fan. These kilns in the present form will give a 30 percent CO_2 gas even when fuel is natural gas.

By intermittent operation it is possible to obtain a much higher CO_2 percentage than even this, but that is of more interest to dry ice than lime manufacturers.

Lime Kiln Height

There always was the great question put by many a lime man to the other—"How high should a lime kiln be?" By height to us, is meant the active height extending from the point of where the combustible comes in, to where the spent gases pass out. It is a question impossible to answer di-





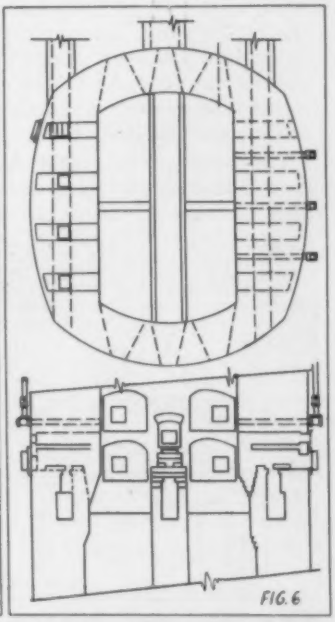


Fig. 4: Gas flow diagram for lime kiln operation and control. Fig. 5: Dual purpose kiln (patented) with mid gas offtake. Fig. 6: Side burner system in plan and cross section to show how many points through which gas can be admitted

Fig. 9: Shows the elements of a natural gas fired, forced draft kiln

rectly, as by so many feet, but we could formulate an all embracing answer like this.

"Required active kiln height varies directly with the amount of lime produced per square foot of horizontal hot zone area, modified by the heat transfer rate variation at different gas velocities, and inversely with the rate of calcination of stone."

This would mean that if one drives the kiln to twice the capacity, twice the height is demanded, but this is reduced by the fact that heat transfer rate varies as the 1.7 power of gas velocity. So for double the capacity, height need be but little more. In other words, rate of driving of a kiln has but little effect on desired height, which is a somewhat startling conclusion, and which for some more involved reasons must be slightly modified, but not greatly so.

The second part of the formula stating that height varies indirectly with the rate of calcination of the stone is, however, not self-correcting and has great influence upon height necessary for proper abstraction of heat from the gases.

A graph showing the calcination rate of high calcium limestone, according to Knibbs, was given in Rock Products, May, 1941, p. 55. This showed that stone of 6 in. minimum dimension calcines in eight hours at 2200 deg. F., but that stone 4 in. requires only four hours, and this means that kiln height for 4-in. stone will be just exactly half that needed for 6-in. stone.

We found that for 6-in. stone and a one-ton calcining rate per square foot shaft area, 35 active feet is all that is necessary; then applying the above reasoning for 4-in. stone, a height of only 17½ ft. would be needed. But in this it is the minimum dimension of the largest stone that counts. The largest of the variety of sizes.

It may be said, why not have 35 ft. in either case and save all the heat possible. To answer that, the first statement would be, that no more heat would be abstracted by 35 ft. than at half that height, because the cooling of the gases depends more upon the amount of stone coming down the kiln, per ton of coal fired, than on kiln height. In other words, it depends more on efficiency of hot zone and cooler recuperation than kiln height.

The second statement to the question of why not leave the height at 35 ft. would be, that gas friction varies as the square of velocity, directly as density of the gases, directly as the kiln height and that it increases very rapidly with the reduction of size voids. All these enter into consideration, but the sum total is that with small stone, draft necessary is so much more than with large stone, even when the height is only 17 ft., that if we had to move the gases unnecessarily through 35 ft., the kiln capacity would not be far from just half. Kiln height for stone from 8-in. to 2-in. would therefore properly be progressively less and less.

There were quite a number of reasons why spall kilns were heretofore not an entire success:

1. There was no satisfactory way of penetrating with the heat through the charge.

2. This new method of balanced draft application, and also means for effectively applying high draft were not available.

3. Shaft height was not varied to correspond with calcination rate governed by the size of stone.

If a kiln is built with a shaft of only 17½, and for smaller stone even less, then such kiln would be no kiln at all, if ever large stone was to be burned in it. But for this a solution was developed only recently, and a

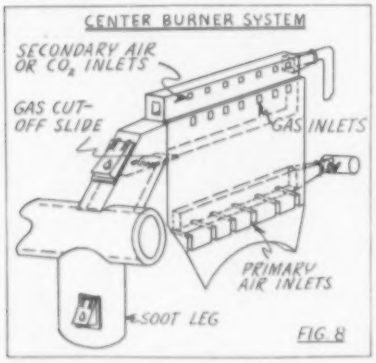


Fig. 8: Center burner system (patented) with primary air duct, a gas duct, and a secondary air or CO_2 duct

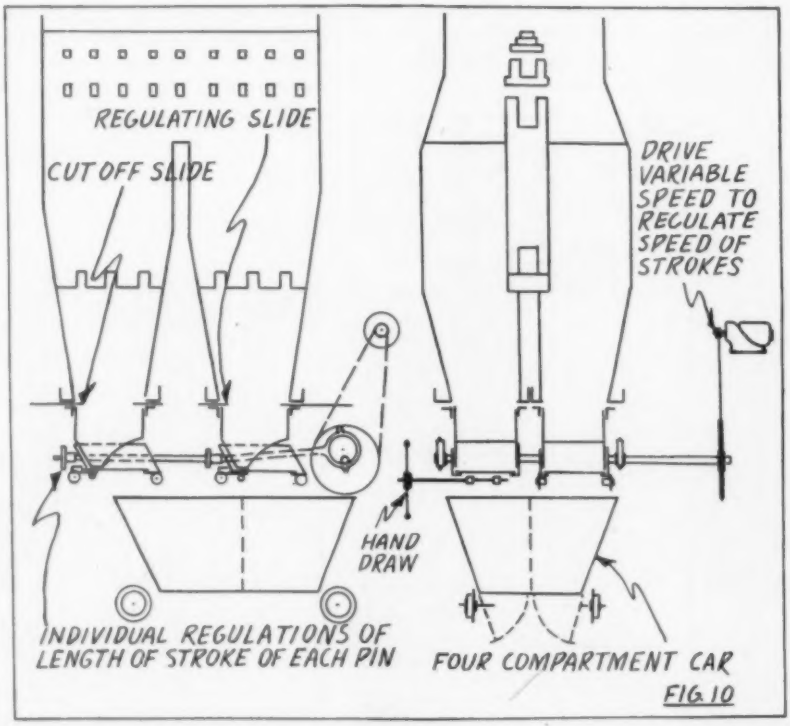


Fig. 10: Complete automatic draw installation for which patents have been applied on the combination and other features

kiln was designed of a truly dual purpose, good for small as well as large stone alternately. Fig. 5 pictures the general scheme. As a whole, it is a standard size kiln with a mid gas offtake. When large stone is to be calcined, all of the gases would be withdrawn through the upper submerged offtake; with small stone they would be withdrawn through the lower side offtakes with a small amount probably passed to the upper offtake. The same fan would handle both. Gases coming off through the lower offtake with small stone would be at the same temperature, as when coming from the upper with large stone.

When stone is large, gas penetrates deeply through the charge and finds sufficient air, but the smaller the stone the less is the penetration and the more channeling there is. While we want reasonably delayed combustion, delayed too much it is very upsetting on the kiln and late burning of gases high up in the kiln does nothing but heat up the kiln top. The kiln under discussion, however, is arranged for complete distribution of gases and assured mixing with air. Fig. 6 shows in plan and cross-section at how many points gas can be admitted. In a standard size kiln there are 20 of the small admission points in the center burner, and eight larger ones in the side wall. In a natural gas fired kiln, there are 16 control valves for these burners so admission of combustible is under complete control to any kiln section. With producer gas, control points are fewer, but still, as a whole, sufficient in number.

In some kilns only the center burner is needed and used; in others all are required. This depends on size of stone, size of kiln shaft, nature of gas, and rate of kiln operation. When all burners are in use the combustible no where needs to penetrate as deeply as one foot, and because this is so, and for some other reasons as well, stone can be calcined.

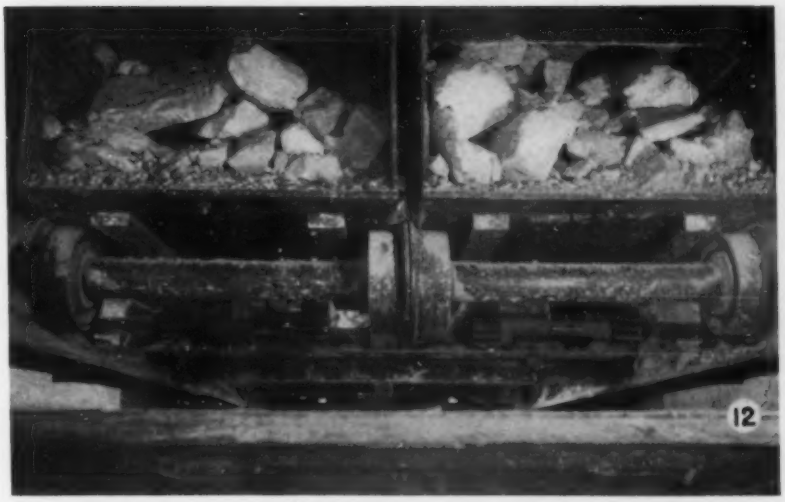


Fig. 12: Two of the four discharge points of automatic draw

For a kiln to be fully satisfactory with large, but particularly so with small stone, it should have a hot zone fully accessible for trimming. The inner walls should have no blind spots that can not be seen or reached with a bar. There must be poke holes strategically distributed and not just placed at random. Fig. 7 shows how this is taken care of. All of the poke holes shown are needed, all are placed within an inch of the right spot. To determine this I do not know how many trimmers were consulted; at times we even take the physique of the crew into consideration.

The center burner development was great. The first attempts were crude, but even these improved operations immediately. Now the structure is elaborate, as shown in Fig. 8. There is a primary air duct—a gas duct—and a secondary air or CO_2 duct.

The primary air duct is used on forced draft kilns, which are kilns open on top but forced from below. They have the advantage that stone can be charged at any time and may be allowed to drop down low without the heat damaging the fan or warping a kiln top.

Fig. 9 shows the elements of a natural gas fired forced draft kiln. As far as I know, we were the only ones who developed this system on gas fired kilns, although on mixed feed kilns, it is common. Forced draft kilns, however, while simple, do not produce as much lime as kilns of induced or balanced draft type.

The primary air duct is also very important when spalls are to be burned, or particularly disintegrating stone. Then air must be forced into the hot zone, but while being forced, it is also delivered properly distributed.

Automatic, Continuous Draw

J. H. Robinson, whom many of you know, and who among lime men stands out as energetic and progressive, urged an automatic draw for some time. I, for long, was reluctant. Any single draw can not bring lime down the kiln uniformly. An ordinary lime kiln really is sort of a bin. We all know of segregations in bins.

In Rock Products, August, 1937, p. 73, the steps in kiln design to make automatic draw possible were illustrated.

Fig. 10 shows in general, the completed installation, and patent was applied for on the combination and on such features as may be patentable.

Fig. 11 shows a portion of the draw with the bottom dump lime car standing below. Thos. F. Robinson, the

(Continued on page 96)

Fig. 11: End view of automatic draw with the bottom dump lime car standing below. Thos. F. Robinson, plant superintendent, is standing alongside

Rapid Method of Determining Alkalies in Cement

By FRANCIS W. GLAZE*

A method for the rapid determination of alkalies in portland cement, which requires about one-third the time required by the tentative method of the American Society for Testing Materials is suggested. The sample of cement is decomposed by hydrofluoric acid in the presence of nitric and perchloric acids, and the resulting perchlorates are decomposed by gentle ignition. The alkalies are determined in the extract from the ignited residue, the sodium as uranyl zinc sodium acetate and the potassium from the platinum in the chloroplatinate precipitate.

The advantages of this method are its speed and simplicity and, so far as it has been tried, there seems to be no material sacrifice of accuracy.

EFFECTS of the sodium and potassium oxides, normally present in portland cement, on the properties of the cement have been receiving considerable attention recently. The present indications are that, although they are minor constituents of cement, their effect is considerable because of their tendency to form complex molecules.[1] Also, the State of California has already limited the amount of total alkali that may be present in cement used for highway construction with certain aggregates to 0.5 percent, when calculated as sodium oxide. Hence, the determination of alkalies in cement, until recently an occasional determination, is becoming a necessary one.

The A.S.T.M. Committee C-1 on cement has recommended, tentatively, a method which requires the treatment of a 5-g. sample of cement by a modified J. Lawrence Smith procedure. The total alkalies are weighed as sulphates, the potassium is determined as the chloroplatinate, and the amount of sodium obtained by difference.

This method seems needlessly long and involved because of the time-consuming digestions and the numerous filtrations necessary to extract the alkalies from the sinter and to purify the alkali extract.

After studying the details of the above method and considering the application of other possible procedures that would require less time and less manipulative attention than the present A.S.T.M. tentative method, without sacrificing accuracy, the method described below was tried and found to be satisfactory.

Method

To 1.000 g. of cement in a platinum dish, add 5 ml. of distilled water, stir to break up any lumps that form and then carefully add 5 ml. of HNO_3 (sp. gr. 1.42). Stir with a platinum rod until decomposition is complete. Now add 5 ml. of $HClO_4$ (60 percent) and 15 ml. of HF (48 percent), thoroughly mix by stirring with the platinum rod, and evaporate to fumes of $HClO_4$ over a radiator[2] or air bath.[3] Cool, remove the rod, wash down the sides of the dish with distilled water, evaporate, and fume off the excess $HClO_4$. Ignite the residue gently over a free flame (with the dish covered) to decompose the perchlorates, at no time allowing the temperature to exceed 500°C. (incipient redness). Cool, add 50 ml. of distilled water, crush all lumps with the flattened end of a stirring rod, digest on the steam bath for 30 minutes, filter through a 9-cm. paper (Whatman No. 42 or equivalent) and wash 20 times with hot distilled water, using about 3 ml. each time. The filtrate and washings should amount to about 125 ml. Acidify the filtrate with HCl (1:1), evaporate to about 75 ml. in glass, cool, transfer to a 100-ml. volumetric flask and take 10 ml. for the Na_2O determination and reserve the remaining 90 ml. for the K_2O.

Sodium Oxide

The Na_2O is determined as uranyl zinc sodium acetate.[4] Evaporate the 10-ml. aliquot sample in a small beaker or casserole to dryness on a steam bath. Cool to room temperature, take up the residue in 1 ml. of distilled water, and add 10 ml. of the uranyl zinc acetate reagent.[5] After standing for 2 hours, filter through a weighed glass filter crucible by suction. A 30-ml. Jena crucible (1bG3) or its equivalent has been found satisfactory. Wash the precipitate by decantation five times with the precipitating reagent (using 2 ml. each time), transfer the precipitate to the crucible with ethyl alcohol which has been saturated with the sodium salt and to which 1 percent by volume of acetic acid has been added, then wash ten times with the alcohol wash solution (using about 2 ml. each time), and finally three times with ether. Draw air through the crucible until the odor of ether is removed, wipe off the outside of the crucible with a damp cloth to avoid electrostatic effects, place the crucible in a desiccator for about ten minutes and then remove to the balance case. Weigh as soon as the crucible and contents reach constant weight (after about 15 minutes in the balance case).

$$\text{Percent } Na_2O = \frac{\text{wt. of precipitate} \times 0.02015 \times 100}{0.1}$$

Potassium Oxide

The K_2O is determined by the modified chloroplatinate method.[6] To the 90-ml. aliquot sample, transferred to a small casserole (or beaker), add an amount of chloroplatinic acid solution slightly in excess of that necessary for the complete precipitation of the potassium present and evaporate on a steam bath to a syrupy consistency, i. e., until solidification occurs on cooling. Drench the cooled residue with about 2 ml. of ethyl alcohol (80-85 percent by volume), break up the residue with the flattened end of a stirring rod and allow to stand one-half hour. The alcoholic solution should be colored if an excess of chloroplatinic acid has been used. Pour the liquid through a small filter paper (Whatman No. 42 or equivalent). Wash by decantation four more times, pouring off the liquid each time as soon as the filter drains, and finally wash around the top of the filter

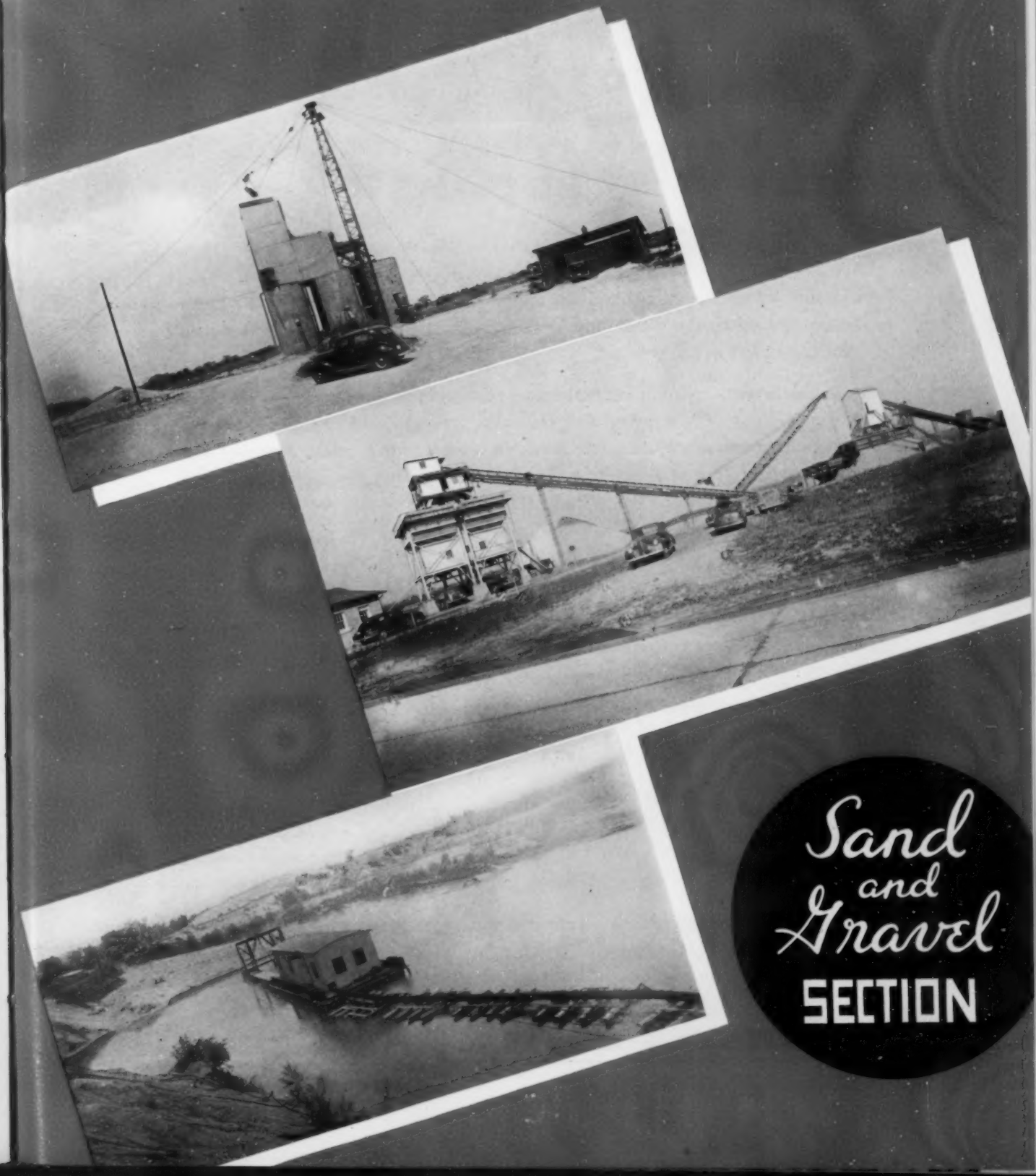
(Continued on page 94)

CHEMIST'S CORNER

Problems and practices of the chemists in the industry are discussed on these pages. Contributions and comments are invited.

* National Bureau of Standards.

Rock Products



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Dredge on left is equipped with cutter head and is shown pumping material to a surge pile under water. The dredge on the right draws material from this pile and pumps it to the top of the plant

By RALPH S. TORGERSON

Operate Dredges In Tandem

One electrically-operated dredge brings material within range of second dredge

AN INTERESTING gravel plant is operated by the Muskogee Gravel Co., Muskogee, Okla., near Fort Gibson, Okla., in which two electric dredges are used to remove material from an alluvial deposit. This is an old bed of the Neosha River, containing material from 3-in. down with a large percentage of gravel. In fact, the plant is designed primarily for the recovery of coarse aggregates and most of the finer sizes are flumed to waste. Another affiliated company known as the Muskogee Sand Co., produces finer sizes at an alluvial deposit on the Arkansas River at Wybark, Okla.

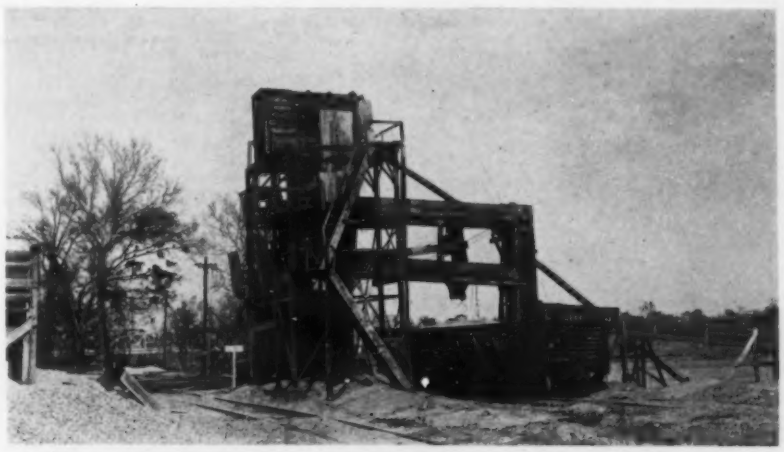
In removing material for the gravel plant, one dredge relays material to the other dredge, providing a surge storage supply under water to take up any slack in production caused by plant or dredge delays. It also increases the operating range of the dredge equipment, and additional scrubbing action provides a clean product at the plant. Both dredges are of the same pumping capacity and are similarly built, but one has a 150 hp. Allis-Chalmers motor driving a 10-in. Amsco pump, and the other has a 150 hp. Westinghouse motor driving a 10-in. Amsco pump. The first or primary dredge has a W. H. K. Bennett Diamond cutter. About 150 tons an hour are delivered to the screening plant under normal conditions.

Material from the second dredge is elevated by 10-in. pipe line to the top of the screening plant where it enters a wooden surge box and then goes over a stationary dewatering and scalping screen. This screen has two decks, the first deck having a 2½-in. grizzly to remove trash and oversize boulders and provide a wearing surface and a second deck having openings ¼ x 2½-in. Usually the throughs are wasted back to the lake by flume unless more finer sizes are wanted.

All Material Loaded Into Cars Or Stockpiles

All the oversize material from the scalper is chuted to a 5- x 12-ft. Telsmith double deck vibrating screen. The upper deck is divided into two sections, half of which is covered with a screen having ¾-in. square openings, and the other half has 2-in. square openings. The lower deck for the first quarter is a solid steel plate. This is followed by another section, representing one-fourth the area, which has a superimposed screen over the 5/16-in. openings to retain more of the ¼-in. material. The second half of the lower deck has a sharper angle of slope and has 5/16-in. square openings without any superimposed screen cloth. Oversize from both decks of this screen goes to a No. 36 Telsmith gyrasphere crusher driven by a 50 hp. slip ring induction motor. Throughs from the crusher are chuted to the boot of a 12-in. belt bucket elevator which carries the product to the top of the plant where it is returned to the stream of material passing over the screens. A 10-hp. electric motor drives the elevator.

(Continued on page 64)



Gravel screening and crushing plant with waste flume to the right. Practically all material is chuted direct to cars; small bin for truck loading, to the left

Cut Maintenance With Firesafe Plant

By BROR NORDBERG

All-steel sand and gravel plant, supported on concrete piers, has plenty of space for chutes between screening floor and bins

ONE OF THE NEATEST appearing aggregates plants on the West Coast is the Valley Park plant of Blue Diamond Corp., Ltd., near Arcadia, Calif., just outside Los Angeles. It was designed by W. G. Bradley, vice-president and production manager, who used permanent construction materials to reduce maintenance to a minimum.

All the supporting framework is of fabricated steel construction, and the cylindrical steel bins have plenty of daylight between the tops of the bins and screening equipment overhead. With about 20 ft. clearance here, it is an easy matter to transfer chutes from one bin to another and still get free flowing material. Many plants are built too complicated in the arrangement of chutes and by-passes with very little clearance for walking space, etc.

Scale Extends Under Four Bins

In order to eliminate excessive stockpiling and re-handling, storage for 2100 tons (live) was provided in twelve 18-ft. diameter cylindrical bins and six interstices arranged in three rows of four bins each. Those grades of material sold in greatest tonnage are stored in one row of four bins with a Howe platform scale 110 ft. long, extending completely below the four bins. Much of the tonnage is hauled in trailer-trucks carrying as much as 20 tons of material. The plant is permanent but has some bolted sections so that it could be moved.

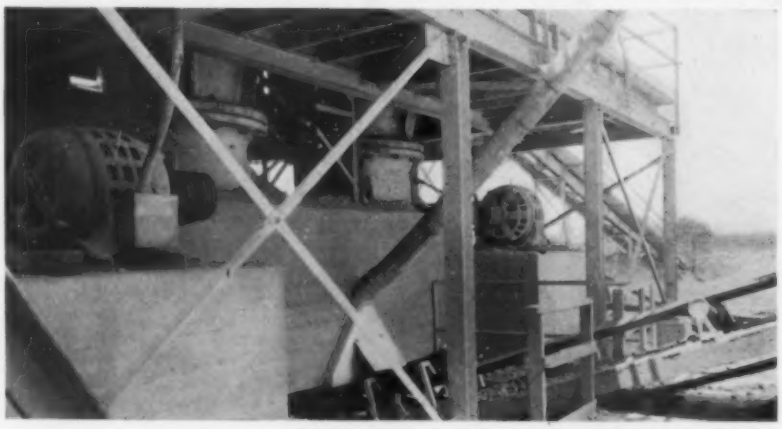
Arcadia is in the San Gabriel valley, one of the two principal producing areas in Los Angeles county. Gravel, some boulders and an excess of sand comprise the pit run material. The plant is typical of others in the area in that crushed and uncrushed material are produced simultaneously, the first being unwashed and the second, washed. Before elevation to the screening plant, the material is passed through a scalping screen and crushers, where a division is made between material to be washed and that to be unwashed and where much of the sand is wasted.

Designed capacity is for a total of 300 tons per hour, utilizing about 800 ft. of 36-in. conveyor belt in two sections, a straight pit conveyor and a cross inclined conveyor, to deliver to a scalping screen. As the pit conveyor (The Conveyor Co., Los Angeles) is built in sections, the field hopper at one end can be moved out on skids parallel to the excavation. Digging is done by a 2½-cu. yd. Link-Belt K480 dragline with a reciprocating feeder to regulate the flow of material from the hopper to the belt. At the hopper outlet a prong-type grizzley distributes the material on the belt with fine material on the bottom as a cushion. During off-plant hours, when excavating in wet material, some re-handling is done to dry it out before transporting to the screening plant, as an aid to dry screening.

The second of the two belt conveyors empties into a surge chute that feeds a 4- x 10-ft. Allis-Chalmers double-deck, low-head vibrating scalping screen. With 1¼-in. square openings on the top deck and one section with ⅜- x ½-in. openings on the lower deck, a separation is made for crushing and some of the excess sand is disposed of. Crushing is done below the screen through two 3-ft. Traylor TY reduction crushers mounted side by side so that the feed is distributed to both from a common discharge box between them.

Interesting Method of Distributing Feed to Crushers

Plus 1¼-in. stone from the top deck of the screen enters the box, which is nothing more than a vertical steel chute with side openings near its bottom through which material flows into both crushers on either side. The tendency is for the stone to build up slightly near the center of the box and take the shock from above, and is so centered that one crusher will receive more feed than the other. This



Two reduction crushers which handle oversize coming from the screen, above

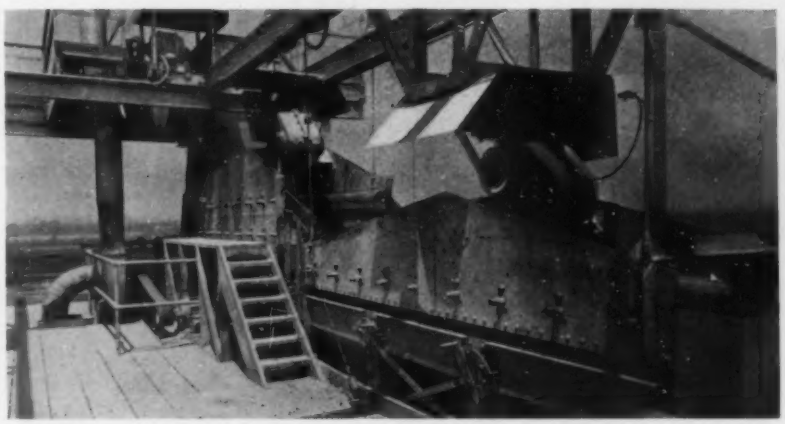
Twelve cylindrical steel bins and interstices hold 2100 tons of sand and gravel. Have independent dry and wet screening units with unusual method of controlling feed to rake classifiers for sand recovery

Cyclone dust collector which handles dust on "dry" side of plant. There is plenty of daylight between bins and screening floor above, and chutes can be easily changed

arrangement is to compensate for added feed that one receives by belt conveyor as rejects from the crushed stone screens. Each crusher is encircled with steel plate around its opening to prevent spillage.

Minus 1¼-in. material is placed through the washing side of the plant, but normally the carryover from the lower screen deck is the part to be processed, allowing a fraction of the sand to escape into a hopper to be wasted. Having removed part of the sand, the remainder of the minus 1¼-in. material drops into the boot of a bucket elevator to be elevated to the gravel washing plant, and a second elevator handles crushed stone from the crushers to the dry screening side of the plant. The elevators, of 150 tons per hour capacity, have manganese digging lips as there is considerable spillage at the tail pulley.

Arrangement of horizontal screens for wet screening. From the screen in the background, the carryover either is stocked or passed to the screen in the foreground for further sizing



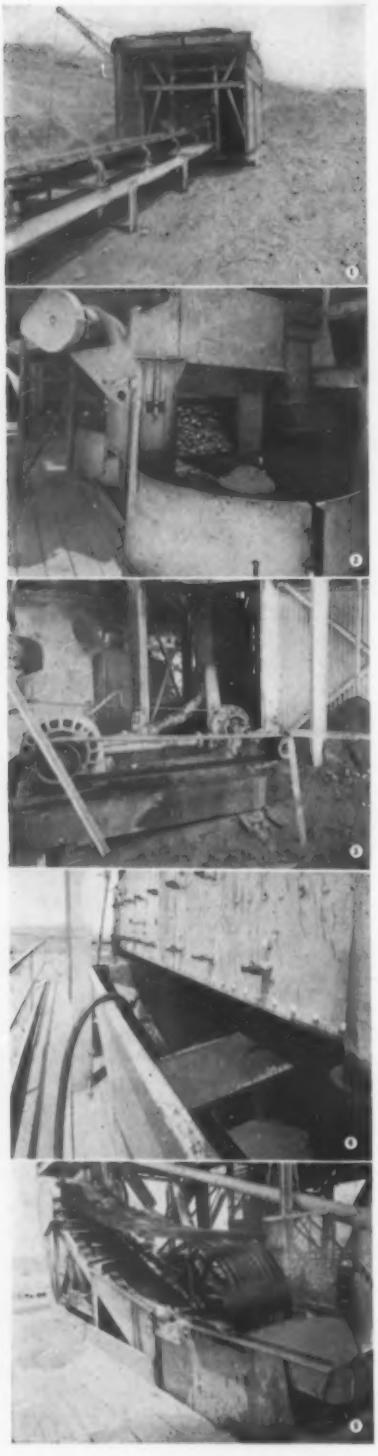
Screens for sizing unwashed crushed rock. In the background is the dust collector fan and collector exhaust pipe

Wet screening is done over two 4- x 14-ft. Allis-Chalmers low-head vibrating screens set in tandem. Between the two screens is a section of steel plate by means of which the carryover from the first screen may be dropped into a bin or passed to the second screen for further grading. Much of the time the top deck of screen No. 1 is 5/16-in. square cloth to produce a 5/16- to 1¼-in. product used in considerable building construction and in that case screen No. 2, a single-deck, is idle.

Rake Classifiers for Sand Production

Sand production is particularly interesting in this plant. A rake classifier is used with a sloping drain board, mainly for dewatering, and some washing, but at the first screen the feed into the classifier is controlled. The lower screen deck is sectional, usually with ⅛-in., 3/16-in. and ¼-in. cloth in that order from the feed end of the screen. The ¼- to 5/16-in. material is taken off as pea gravel to an interstice bin and the throughs from the entire screen deck drop into a steel hopper nearly the length of the screen. The hopper tapers at its lower end to an outlet into a pipe which carries water and fines to the classifier. At the bottom is an adjustable discharge gate. In operation, the hopper fills up with sand and wash water, overflowing all around the top edge of the tank, or hopper, and the surplus of water and fines carried with it is carried by gravity through a steel pipe to a waste sand pump.

By changing the adjustable gate opening, the head of water over the



From top to bottom: (1) Movable pit conveyor and hopper showing dragline in back and grizzley prongs to cushion material on belt; (2) arrangement of crushers and common feed hopper to split load with return conveyor into one crusher, to the left; (3) Sand pump which wastes excess sand, all pipes converging to the trap in back of pump; (4) Sand hopper beneath one of the screens where production of sand is controlled ahead of sand rake, excess water and fines flow over the sides and are wasted, and saddle flume in foreground is to by-pass some water and coarse particles to waste; (5) Sand drag which dewaters sand, the feed from the pipe, on the right, coming from hopper beneath overhead screen

weir is varied to waste the desired percentage of fines and excess water to the pump. Water required for washing is applied only near the discharge end of the screen, above the ¼-in. section of cloth, but is in excess of that which can be handled satisfactorily in the small rake classifier. By removing the first section of screen cloth (⅛-in. openings) more of the excess sand can be diverted to the pump by dropping all the throughs from the top deck above this section into a hopper (not the tank) and piping it to the pump.

Another arrangement used to regulate the rake feed is a saddle, or cross flume, extending across the top of the hopper and under the section of screen where water is applied. By using the flume some of the water may by-pass the tank over the weir and carry with it a portion of the larger sand particles around ¼ in. The result of these arrangements is to control the volume of feed to the rake, to get a higher percentage of solids in the feed and to eliminate size extremes, so that the rake functions mainly as a de-watering device. Out of 800 g.p.m. of water used, half of it goes to the classifier. Sand production is normally about 60 tons per hour.

Plasterers' sand is comparatively unimportant at this plant and is produced by inserting a small section of ⅛-in. mesh screen cloth into the bottom of the sloping drain board, the throughs going to an interstice bin. Overflow from the sand drag joins the other streams of water and wasted material in a common trap feeding a Krogh sand pump which wastes it.

Dry Screening Plant

On the other half of the plant, crushed rock is sized over two 4- x 14-ft. Allis-Chalmers low-head screens. The crushers are set to crush down to about ⅞ in., and the discharge is carried by cross belt conveyor and bucket elevator to the first screen. Oversize (plus 1½ in.) returns by chute and 20-in. conveyor belt to one of the crushers. Aside from regular crushed aggregates, a 7/16- to ⅛-in. product for black top purposes and a minus ⅛-in. dust are taken off the bottom deck of one screen. Sand and dust bins are covered. Ducts lead from the crusher discharges, the elevator boots and other sources of greatest concentration to a cyclone dust collector which discharges into the dust bin.

J. H. Summers is manager of rock, sand and gravel operations for the company, and R. C. Reeves is superintendent of the Valley Park plant. A second plant is operated at Roscoe, Calif., in the San Fernando valley. In addition to its rock, sand and gravel production, Blue Diamond Corp. manufactures gypsum products, portland cement, lime and ready-mixed concrete. Officers are W. J. Valkenburgh, president; W. G. Bradley, vice-president; and N. J. Redmond, secretary-treasurer.

Phosphate Industry Is Active

ALTHOUGH shipments of ground phosphate rock in the Tennessee field have dropped down with the usual fall-off in May, June, and July, May shipments were over 10 percent larger than May, 1940, while June and July prospects are expected to exceed last year. TVA is to build a phosphate plant at Godwin, Tenn. Prospecting work is being continued by the International Agricultural Corporation in large areas of the blue and brown rock deposits in Hickman county. This company now has its main office in Chicago, having recently moved from New York.

One possibility in the blue rock field, especially in Totty's Bend, is development of cheaper mining by taking the blue rock vein of 20-in. to 3-ft., along with a few feet of overlying shale, high in both carbon and silica, for furnace production of phosphoric acid, with a significant content of nitrogen and potash, and at the same time mining and calcining a few feet of the underlying phosphatic limestone carrying 25 percent P_2O_5, and acidulating it with the phosphoric acid to treble super containing both N and K_2O.

Load and Weather Effects On Pavements

A 32-PAGE BOOKLET has been prepared by the National Highway Users Conference, Washington, D. C., which contains some valuable information for all producers of aggregates and cement. It also should be helpful from the standpoint of the truck user as it gives a complete tabulation of size and weight limitations imposed on trucks using the highways in the various States, the effects of weather and traffic volume in fixing pavement strength, and the probable requirements of pavements for military equipment.

Rebuilding After Fire

Reinforced concrete bin floor and piers in new plant. Increase washing, screening capacity; add impact crusher

By FRANK M. WELCH

IN THE MIDST of filling a large contract to supply aggregates for a big highway improvement project, the Nickel Plate Sand and Gravel Co., Erie, Penn., had the misfortune of having its plant almost completely destroyed by a fire. Steps were immediately taken, however, to rebuild and modernize the plant and continue to supply material for this contract. The plant is located 12 miles west of Erie on the outskirts of Fairview, Penn., from which town it derives its name. Material was being furnished to improve, widen, straighten, and practically rebuild U. S. Route No. 5, which almost runs past the plant from Erie to the Ohio State line.

At 6:30 p.m., May 20, 1940, shortly after most of the workmen had left for the day, fire was discovered in the main super-structure. It spread so rapidly in all directions that in spite of the Fairview fire department and the efforts of the neighboring inhabitants, practically the entire structure, including the conveyor trestles and feed hopper, was destroyed down to the concrete footers.

As the plant had not been rebuilt since 1926, the officials decided to modernize it in every way to meet present market requirements more completely and efficiently. Yet it was paramount to do so in the shortest time to avoid, as far as possible, any delays in deliveries to the highway project.

Fortunately, considerable material had been stocked in piles, which served to span much of the gap. Furthermore, the original bins over their driveways were set on concrete piers reaching to 14 ft. above the ground. Careful inspection revealed that the fire had not injured these piers, and therefore new construction could start from the top of them.

Bin Floors of Reinforced Concrete

By Memorial Day insurance claims had been adjusted and the debris cleared away. Their next move was to construct a concrete bin floor one foot thick on top of the piers, to replace the old timber floor. This could be done entirely with materials on hand.

For reinforcing, old railroad rail on hand was used. This was laid on about 2-ft. centers on top of and spanning the walls with the bases down. Old 1-ft. lumber cut in 2-ft. lengths was laid between the rails on the top of the rail bases, thereby supplying the bottom forms. It was then only necessary to box in the sides and ends of the slab and proceed with pouring.

While this floor was being built, erection drawings and lumber lists for the new bins were completed and the lumber ordered. In the meantime sufficient preliminary drawings of the entire new plant had advanced sufficiently to permit the ordering of all new machinery necessary. New and somewhat extensive concrete crusher foundations also had to be installed and this work was done while the new machinery was being built.

Some equipment was salvaged from the fire. These items consisted mainly of a 3- x 8-ft. Niagara triple-deck vibrating screen, an 8-in. Telsmith primary breaker, a No. 25 Kennedy-Van Saun ball bearing gearless crusher, and a Greenville impact crusher. Some factory repair work was necessary on part of these units.

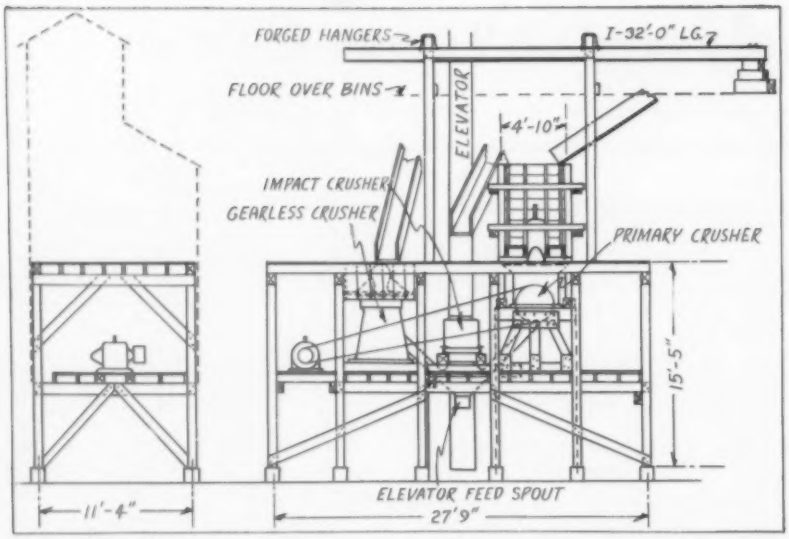
Crushing and Screening Set-up Utilizes Gravity

A most urgent requirement in the new plant was adequate scrubbing facilities for the raw material. This was accomplished by replacing the original multiple screening design with a 48 in. by 26 ft. triple-jacketed revolving screen which included a 6-ft. scrubbing section. All the original crushers were used but were relocated at the side of the plant where all oversized material could be spouted to them by gravity.

A new 10- x 20-in. continuous bucket elevator, 56-ft. centers, mount-

Below: Plant rebuilt after fire with concrete bin floors reinforced with old railroad rails

Above: Other side of plant, showing bucket elevator to return the crushed product to the screen



Showing relative location of crushing facilities, elevator, and chutes

ed on steel thimble roller chains and operating on a structural steel frame was installed to return all the crushed product to the top of the plant. At this point a butterfly valve now permits the crushed stone to be remixed with the round gravel in the main revolving screen or to be discharged on to the 3- x 8-ft. Niagara screen for producing various 100 percent crushed materials.

Considerable of the machinery contained in two sand drags which operated in the old plant was salvaged. These units were rebuilt on the job and mounted over the bins where sand can be loaded direct or conveyed to storage piles in the yard.

The new plant started operation August 20. At that time the housings over the main plant, the crusher house and the conveyor trestle had not been installed. Neither had the new sand storage conveyor been built as yet but hauling to the extensive highway project adjacent to the property was resumed.

A great deal of credit for the speed with which the debris was cleared away, usable parts salvaged, new material and equipment ordered and erection and installation completed, is due to L. E. Redding of Fairview, Pennsylvania. Mr. Redding, a local contractor and construction engineer who had designed and built the original plant for the Nickel Plate Sand and Gravel Co. before World War 1, and modernized and rebuilt it in 1926, took complete charge before the fire was out. He worked tirelessly days, nights and Sundays, synchronizing all agencies which contributed to the replacement of the burned plant, until regular shipments of sand and gravel had again started. Cooperating with Mr. Redding were Leon M. Fairchild of Fairview, Penn., president and general manager of the company; Cecil Fairchild, vice-president and David S. Gifford, Erie, secretary and treasurer.

To Cut Hauling Cost with Belt Conveyor

The new plant has a capacity of 150 tons of commercial material per hour. Excavating equipment consists of a ½-cu. yd. Insley gasoline shovel and a 1-cu. yd. Marion Type 7 shovel. Raw material is hauled from the shovels to a receiving hopper by trucks where an apron feeder controls the flow on to a 26-in. belt conveyor. This conveyor extends to the top of the plant where it discharges directly into the new scrubber.

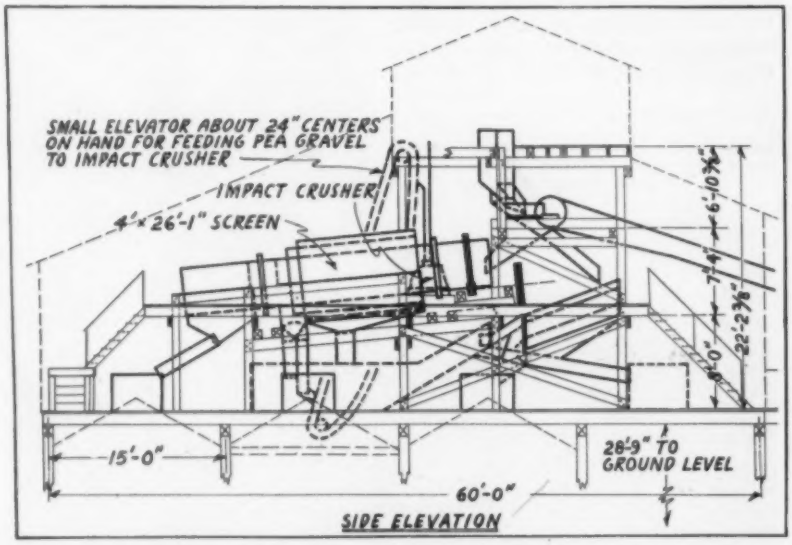
Two ½-cu. yd. cranes, an Insley and a Byers, together with trucks, serve the yard storage piles as well as their batching bins. As stated above, the yard storage equipment will soon be augmented by a belt conveyor reaching from the plant to the sand storage piles, which will eliminate much of their trucking. The outer section of this conveyor will consist of a swinging boom, pivoted at the inner end to enable the spreading of sand over a large area.

New Conveyor and Pumping Equipment

The new 26-in. belt on the main plant conveyor is 6-ply, 32 oz. duck, with ⅛-in. top cover made by the U. S. Rubber Co. It operates on Dodge Manufacturing Co. idlers. An 8-in. Gould pump operated by a 60-hp. Burke motor furnishes the washing water for the plant.

The 48 in. by 26 ft. triple jacketed revolving screen with scrubber section and the 10- x 20-in. continuous bucket elevator on a steel frame, together with steel gathering hoppers, feed and discharge spouts with butterfly valves and connections, were furnished by the Greenville Manufacturing Works of Greenville, Ohio. The new plant was designed by the F. M. Welch Engineering Service of Greenville, Ohio.

This modernized plant is an example of what can be done under emergency conditions to increase plant efficiency, reduce fire hazard, and add to the strength of the structure by using reinforced concrete.

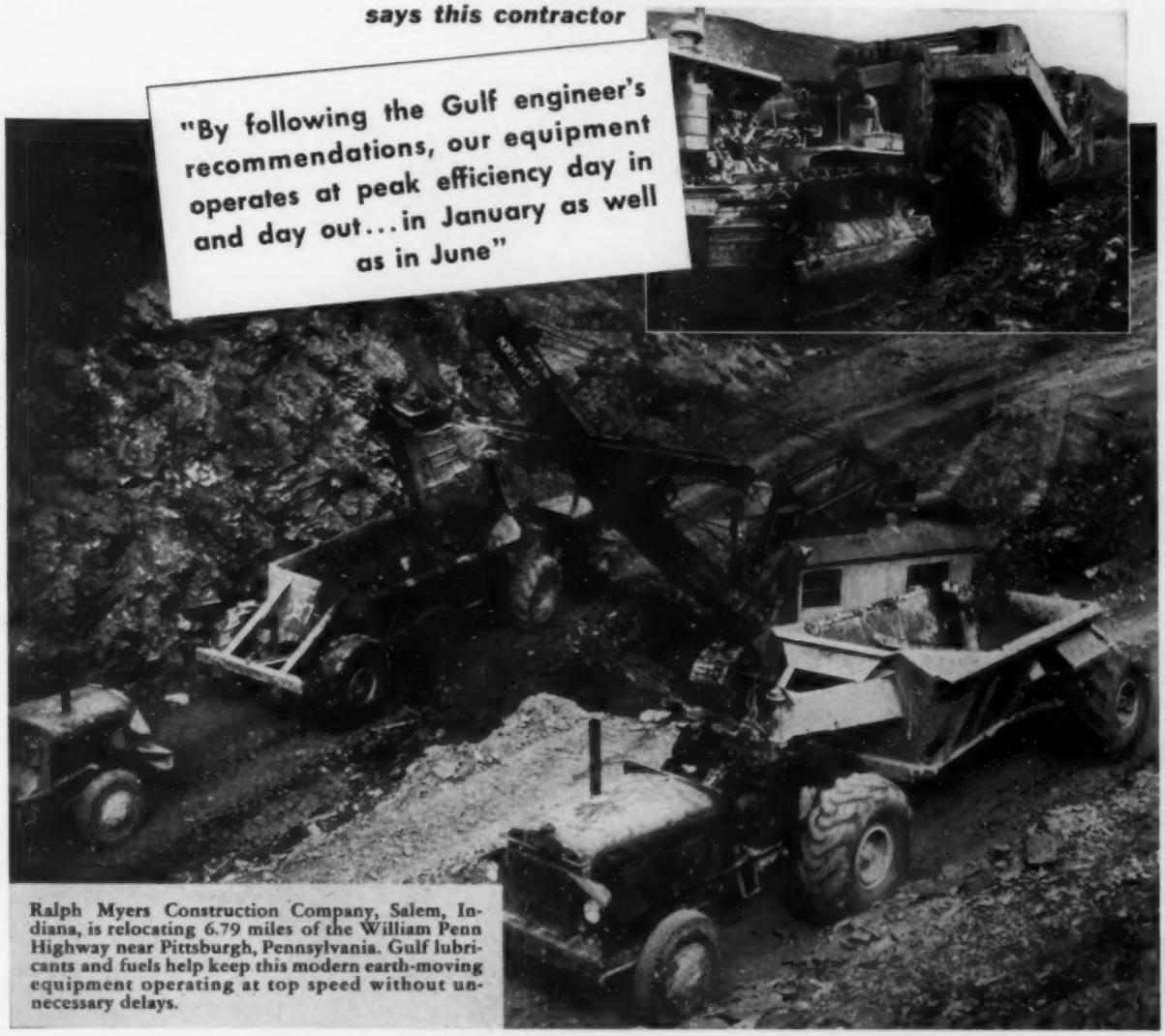


Elevation view of rebuilt sand and gravel plant, showing location of impact crusher

"With GULF LUBRICANTS and fuels we move more dirt and rock at less cost"

says this contractor

"By following the Gulf engineer's recommendations, our equipment operates at peak efficiency day in and day out... in January as well as in June"



Ralph Myers Construction Company, Salem, Indiana, is relocating 6.79 miles of the William Penn Highway near Pittsburgh, Pennsylvania. Gulf lubricants and fuels help keep this modern earth-moving equipment operating at top speed without unnecessary delays.

"WE started in January on this job and kept ahead of a tough contract schedule right through the cold weather, thanks in large part to the quality lubricants and fuels recommended by the Gulf engineer," says this contractor. "Now in warm weather we continue to operate with maximum efficiency and negligible maintenance costs by following his recommendations."

You, too, will find it *real economy* to use Gulf quality lubricants and fuels on your next contract. Call in a Gulf engineer today and ask him to recommend the right lubricants and fuels for your equipment. His one big aim is to help speed your work. No matter where your job is located, you are sure of quick delivery of Gulf quality products through more than 1200 warehouses located in 30 states from Maine to New Mexico. Write or phone your nearest Gulf office.

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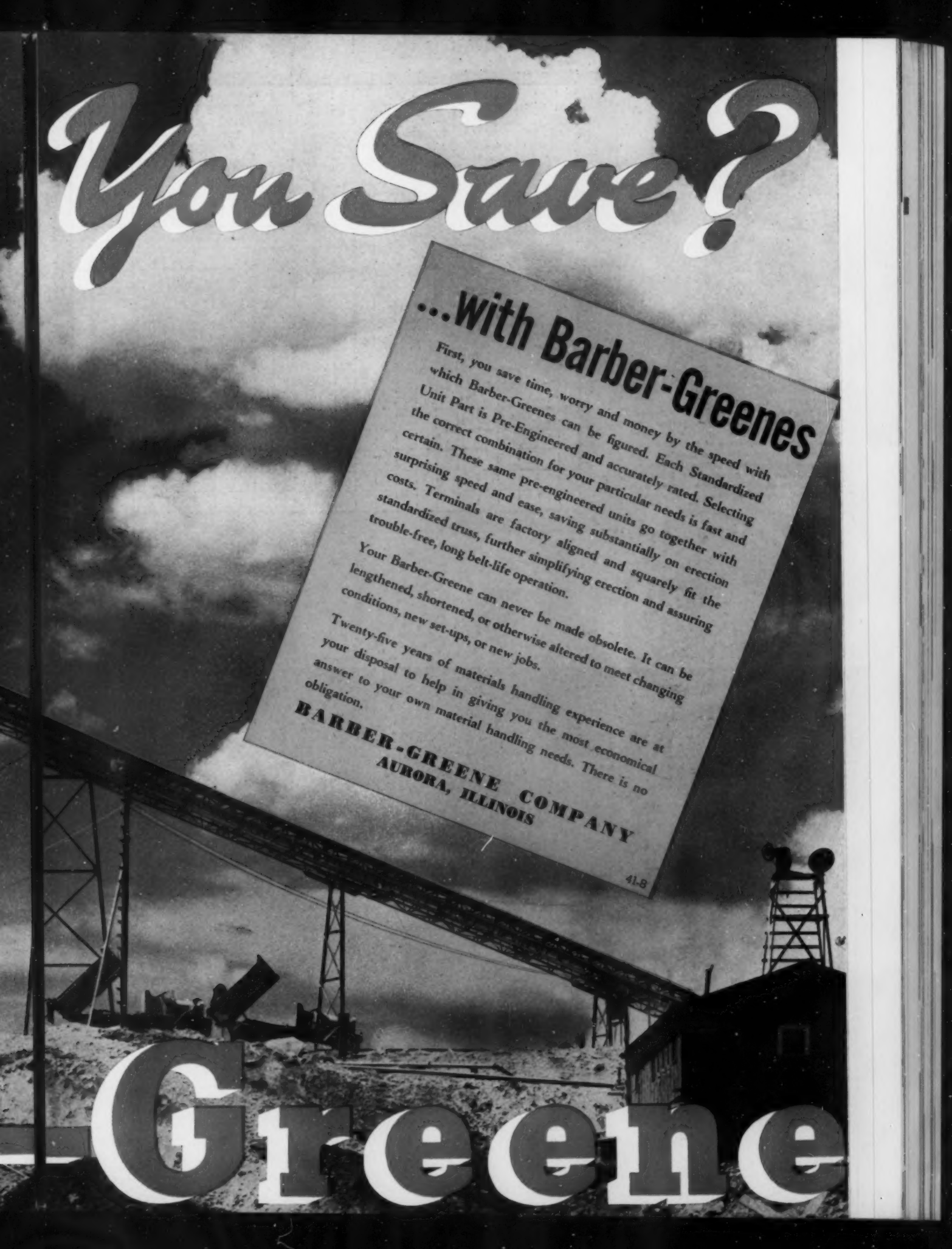
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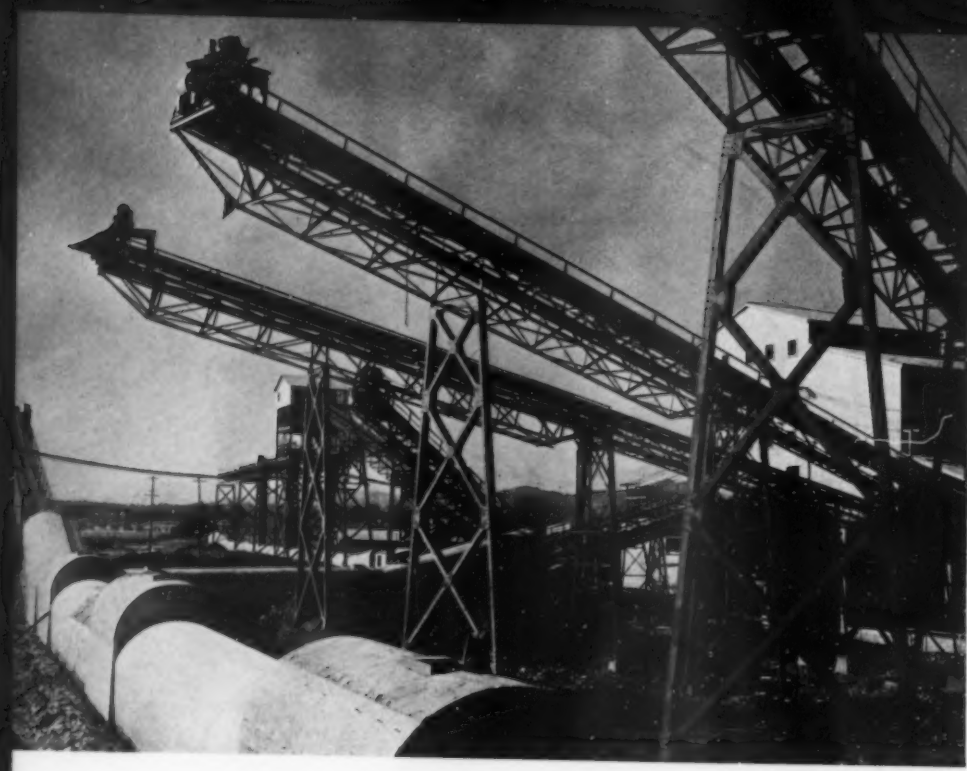
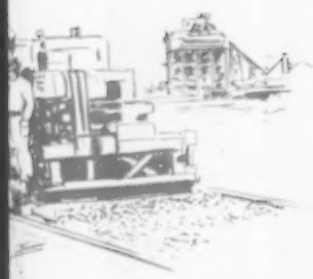


Typical of the big sand and gravel plants for the large irrigation projects is the Shasta Dam aggregates plant. Note the sand and gravel storage tunnels built above the ground directly below stockpiling conveyors

Airplane view of modern sand and gravel plant of the American Aggregates Corporation near Columbus, Ohio

Sand and Gravel Prices



PRICES of sand and gravel at the principal producing points throughout the United States as reported to ROCK PRODUCTS are listed below. Although the tabulation is not complete, the price range at the points listed will be sufficiently representative to show the trends in the various regions. The prices are averages for each producing point.

ARKANSAS

Little Rock: Gravel has been quoted at 80c per ton, and sand at 60c per ton, both f.o.b. rail cars and trucks.

CALIFORNIA

Bakersfield: Retail prices at plant, rock or gravel, quoted at $1.50 per ton; sand, 50c per ton. The average net plant price to dealers and to contractors on jobs of 1000 tons and up is $1.30 per ton for gravel; 40c per ton for sand.

Fresno: F.o.b. plant prices are $1.10 per ton for gravel; 60c per net ton for sand, both prices subject to a 10c per ton cash discount.

Redlands: Concrete sand, ¼-in. down, is sold at 40c per ton; plaster sand, 6-mesh and finer, 50c per ton; all sizes of gravel, 90c.

CONNECTICUT

Hartford: Loaded at the plant prices per ton are as follows: 1-in. gravel $1.00; ¾-in. gravel, $1.10; ½-in. gravel, $1.40; and ¼-in. gravel, $1.65. Sand is quoted at 50c per cu. yd.

New Britain: F.o.b. quotations are sand at 80c per cu. yd., and gravel at $1.00 per cu. yd.

FLORIDA

Miami: Retail price of concrete gravel is $1.25 per cu. yd. delivered; retail sand is $1.15 per cu. yd. Pea gravel sells for $1.75 per cu. yd. delivered. F.o.b. wholesale prices are: concrete gravel, 90c per cu. yd.; sand, 70c per cu. yd.; pea gravel $1.25 per cu. yd.

GEORGIA

Atlanta: Dealer price for sand is 45c per ton, contractor price (in dealer territory, 55c per ton f.o.b. cars at plant. Prices in volume to highway contractors varies between above limits due to freight differential.

ILLINOIS

Chicago territory: Producers within a radius of 50 miles serving this territory are quoting the following prices, f.o.b. plants: washed gravel, 50c per ton; washed torpedo, 45c per ton; washed re-screened, 60c per ton; washed roofing gravel, 35c per ton; crushed road gravel, 45c per ton; bank run, 30c per ton. Another quotes: torpedo sand, 40c per ton; No. 1 sand, 60c; gravel, 45c per ton at one plant; sand, 60c, and gravel, 60c at a second plant; and sand, 40c per ton and gravel, 60c per ton, at the third plant.

Mattoon: F.o.b. plant prices are given as follows; sand, 60c per ton; gravel, 75c per ton.

Mendota: Average price range is 28c per ton for sand and 38c per ton for gravel.

IOWA

Cedar Rapids: Concrete sand is quoted at 60c per ton f.o.b. plant, and gravel at $1.35 per ton.

Des Moines: Following quotations per ton are based on both f.o.b. trucks and cars at plant: concrete and brick sand, trucks 70c, cars 50c; ½ to ¾-in. gravel, trucks $1.50, cars $1.25; ¼ to 1½-in. gravel, trucks $1.50, cars $1.25; pea gravel, $1.00 for both trucks and cars. Another quotation includes: concrete mix, 30% gravel, 70c both cars and trucks; concrete mix, 50% gravel, 90c cars, $1.25 trucks; gravel ¼ to ¾-in. or ¼ to 1½-in., $1.20 cars, $1.85 trucks; pea gravel, 95c cars and $1.35 trucks.

Mason City: Plaster, building, and concrete sand is quoted f.o.b. plant, 75c per ton in trucks, 65c in cars; all size ranges of gravel from ¼-in. to 2-in., $1.35 per ton in trucks, $1.25 per ton in cars.

Waterloo: Average prices are 45c per ton f.o.b. plant for sand, and $1.25 per ton for gravel. Other central Iowa points range from 40c per ton for sand to $1.15 for gravel.

INDIANA

Peru: Average price for sand is 28.5c per ton f.o.b. plant with a range of 20 to 35c, depending on quantities, deliveries, etc. Average price for gravel is 54.8c, with a range of 50 to 75c.

Terre Haute: Prices on all grades of washed gravel f.o.b. pit are 75c per ton, and on washed sand are 60c per ton.

Northern Indiana: Quotations per ton f.o.b. plant are: No. 6 crushed bank run gravel, 70c; ⅜ and ½-in. or No. 11 and No. 12 gravel, 75c; 1-in. gravel, 80c; all other washed sizes, 85c; No. 17 masons sand, 30c; No. 14 concrete sand, 25c; railroad engine sand, 30c.

KANSAS

Hutchinson: Quotations in this area are 40c per ton and a range of 40 to 45c per cu. yd. for sand.

Topeka: F.o.b. carload prices are 30c per ton for all grades of sand, and 40c per ton for gravel. Retail prices average 37c per ton for sand and 61c for gravel.

KENTUCKY

Louisville: Prices of sand or gravel f.o.b. cars are $1.00 per ton, net; f.o.b. trucks, concrete sand or concrete gravel, $1.25 per ton, net; masons sand, $1.35 per ton, net; 1-in. or ¾-in. gravel, $1.35 per ton, net. The territory served with company-owned truck is divided into zones, and the delivered price is based on the f.o.b. truck price listed plus a zone hauling price.

LOUISIANA

Northern Louisiana: Average prices f.o.b. plant are 60c per ton for pit run, 70c per ton for sand, and 90c per ton for gravel.

MARYLAND

Baltimore: Prices per net ton are: washed sand, 80c f.o.b., $1.20 delivered; gravel, $1.20 f.o.b. and $1.80 delivered; bank sand, 80c f.o.b., $1.30 delivered.

Longwoods: Plant prices per ton are as follows: concrete sand, 45c; washed pea gravel, 60c; ¾-in. washed gravel, $1.50; plaster sand, 55c.

MASSACHUSETTS

Attleboro: All types of building sand range from $1.50 to $1.75 per cu. yd., and from $1.50 to $1.75 for gravel. Wholesale prices range from 85c per cu. yd. for sand to about $1.25 per cu. yd. for gravel.

Boston: Washed and screened concrete sand delivered in the metropolitan area, $1.15 per net ton; washed and screened mason sand, $1.35 per net ton; and washed and screened gravel, all sizes $1.50 per net ton. Delivered prices include about 50c per ton for trucking. Most concrete aggregates are sold in the form of ready mixed concrete in this territory.

MICHIGAN

Detroit: Quotations per net ton are: washed and graded gravel, f.o.b. rail 50 to 75c, delivered, $1.30 to $1.55; washed sand f.o.b. rail 30 to 50c, delivered, $1.00 to $1.25.

Airplane view of modern sand and gravel plant of the American Aggregates Corporation near Columbus, Ohio

In the United States

MONTANA

Helena: Quoted prices per cu. yd. f.o.b. plant are: road gravel $1.25; railroad ballast 40c; 1 to 2-in. $1.25; ½ to ¾ in., $1.50; under ½-in., $1.75; and sand, $1.25.

MISSOURI

Chillicothe: Prices of sand and gravel f.o.b. cars and trucks per ton are: concrete gravel, $1.00; pea gravel, 65c; road surfacing gravel, 60c; railroad ballast, 55c; sand and gravel mixture, 55c; oil mat gravel, 50c; sand, 40c.

Cape Girardeau: F.o.b. quotations per ton are 70c for washed sand and 75c for washed concrete gravel.

Kansas City: Sand is quoted f.o.b. plant wholesale at 50 to 70c per ton. There is no gravel in this area.

St. Louis area: Prices applying to coarse, medium and fine Mississippi River sand and coarse and medium Meramec River sand, and on 2-in., 1½-in., 1-in., ½-in., and ⅜-in. gravel the average to dealers is 60c per ton on cars or trucks f.o.b. plant. To non-dealers the price is 75c per ton f.o.b. trucks.

NEBRASKA

Lincoln: Quotations per ton at plant f.o.b. rail are as follows: roofing gravel $1.50, sand-gravel mix (50% or plus on 10-mesh) 40c, road gravel (70% on 10-mesh) 40c; screened sand (plaster, masons, blast) 30c; concrete gravel (90% on 10-mesh) 60c; fine sand, 30c; engine sand, 40c; railroad bedding and filling sand, 20c; pit run sand, 30c.

NEW YORK

Buffalo: Prices f.o.b. cars or trucks per net ton at plant are: concrete sand and concrete gravel, 65c; filter sand, $1.00; crushed gravel, $1.10.

Utica: Prices per net ton in the vicinity of Utica are: gravel, crushed, 85c; uncrushed, 70c; sand, concrete and masons, 50 to 65c; foundry core, 85c. Trend is upward.

NEVADA

Reno: Quotations per ton from bunkers or stockpile are: sand, 90c; gravel, $1.30.

NEW HAMPSHIRE

Keene: Prices quoted per ton are f.o.b. plant: washed crushed gravel, $1.00 to $1.25; concrete sand, 50c.

NORTH CAROLINA

Swananoa: Quotations that follow are per ton f.o.b. plant; traffic bound macadam No. 4, $1.00; paving stone No. 2 (2½-in. down)) $1.10; surface treatment (⅜-in. No. 9A) $1.25; and all other sizes, including No. 3, class A concrete aggregate, $1.20; concrete sand, 75c.

OHIO

Cincinnati: Delivered prices for sand or gravel in Hamilton county are as follows: sand, $1.30 per ton in 5-ton lots, lesser amount, $1.90; gravel, $1.40 per ton in 5-ton lots; $2.00 per ton in lesser amounts.

Cleveland: Prices which follow are f.o.b. plant per ton: washed concrete sand, 90c; masons sand, $1.00; concrete gravel, $1.10; roofing gravel, $1.50; crushed gravel, $1.35. Look for 10c per ton increase in August.

Columbus: Average net prices per ton are as follows: railroad gravel ballast, 48c; concrete sand for building and highway work, 65 to 70c; gravel, all sizes for building and highway work, 65 to 70c.

Fremont: Prices of masons and concrete sand are: 95c to dealers, $1.05 to contractors, and $1.30 to retail trade.

Middletown: F.o.b. plant and delivered by truck prices per cu. yd. are as follows: washed gravel, $1.10 f.o.b., $1.40 by truck; same prices for washed sand; graded pit run, 70c f.o.b., and $1.10 by truck; crushed gravel M 3.92, $1.20 f.o.b., and $1.50 by truck.

Portsmouth: All sizes of washed gravel are quoted at $1.05 a ton; washed masons sand, $1.05 per ton; and washed concrete sand, 96c.

Dresden: Present prices f.o.b. plant for rail or truck shipment are: gravel, all kinds, 90c per ton; sand, all kinds, 70c per ton.

PENNSYLVANIA

Easton: Per net ton prices are quoted as follows: 50 to 60c for sand, and 50c for gravel.

Erie: Prices per ton are given as follows: sand 85c, coarse sand 60c, pea gravel 60c, ¾-in. gravel 75c, 2B gravel 85c, 2 gravel 85c, 1B gravel $1.45, 2B and 2, 85% crushed, $1.45.

OREGON

Portland: F.o.b. and delivered prices per cu. yd. are as follows: sand and gravel f.o.b. bunkers, $1.50; delivered, $1.90 to $2.15; masons sand f.o.b. bunkers, $1.50; delivered, $1.90 to $2.15.

TENNESSEE

Chattanooga: Prices quoted are per ton f.o.b. cars: washed concrete sand, $1.25; 2-in. to ¼-in. paving gravel or Class A concrete 1-in. to ¼-in., $1.00; gravel, ¾-in. to ¼-in., or ½-in. to ¼-in., $1.10.

Nashville: Prevailing prices on sand and gravel in this market, f.o.b. cars nearest terminal siding to building site or f.o.b. trucks, yard, are as follows: 2¼- and 2 in. down gravel, $1.40 per ton; 1½- and 1¼-in. down, $1.50; 1- and ¾-in. down gravel, $1.60; roofing or pea gravel, $1.70; washed Cumberland river sand for masonry, concrete or plaster work, $1.90 per ton. Delivered to job site within radius of one mile of public square, 5c per ton additional. For each additional ½-mile haul, an additional 5c per ton charge is made. These prices are subject to 2% discount, 10th of the month, cash 30 days.

UTAH

Salt Lake City area: Delivered prices for sand and gravel, according to specifications, range from 75 to 95c. Pit price ranges from 40 to 60c.

WASHINGTON

Seattle: Prices quoted per cu. yd. are within city limits; other points according to mileage: sand and gravel at pit or delivered, $2.35; superfine sand, $3.50.

WISCONSIN

Milwaukee: Quotations per cu. yd. are as follows: torpedo sand, delivered, $1.75, at bin $1.00, to dealers, 82c; stone, delivered, $1.85; masons sand, delivered, $1.75.

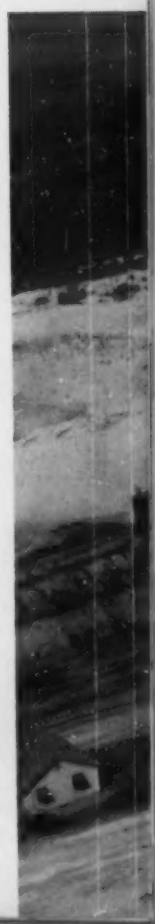
TEXAS

Austin: Delivered truck prices per cu. yd. are $1.35 for washed and screened building gravel and 90c for washed and screened sand.

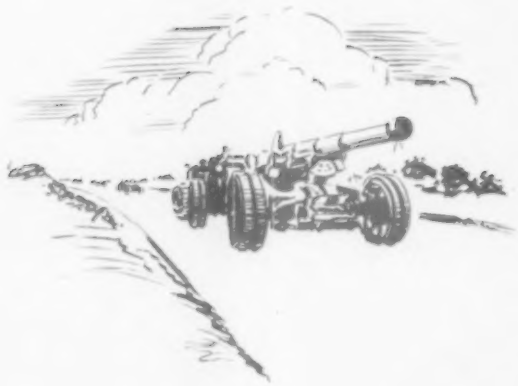
Dallas: Quotations are for central, north, east and southeast Texas f.o.b. shipping points: 90c per ton for gravel and 65c per ton for sand. For central and northern Louisiana, quotations are $1.00 per ton for washed and screened concrete gravel and 75c per ton for washed and graded concrete sand.

San Antonio: Prices average about 82c per ton for gravel and about 44c per ton for sand.

Waco: Current prices in this territory are as follows for washed and screened material per ton: ¼ to 1-in. gravel, 95c; ¼ to 1½-in. gravel, 80c; concrete sand, 60c; plaster and brick sand, 60c; ready mixed gravel and sand for concrete, 90c. Pit run concrete gravel is quoted at 40c per ton, and roofing gravel, ¼ to ⅝-in., $1.75.

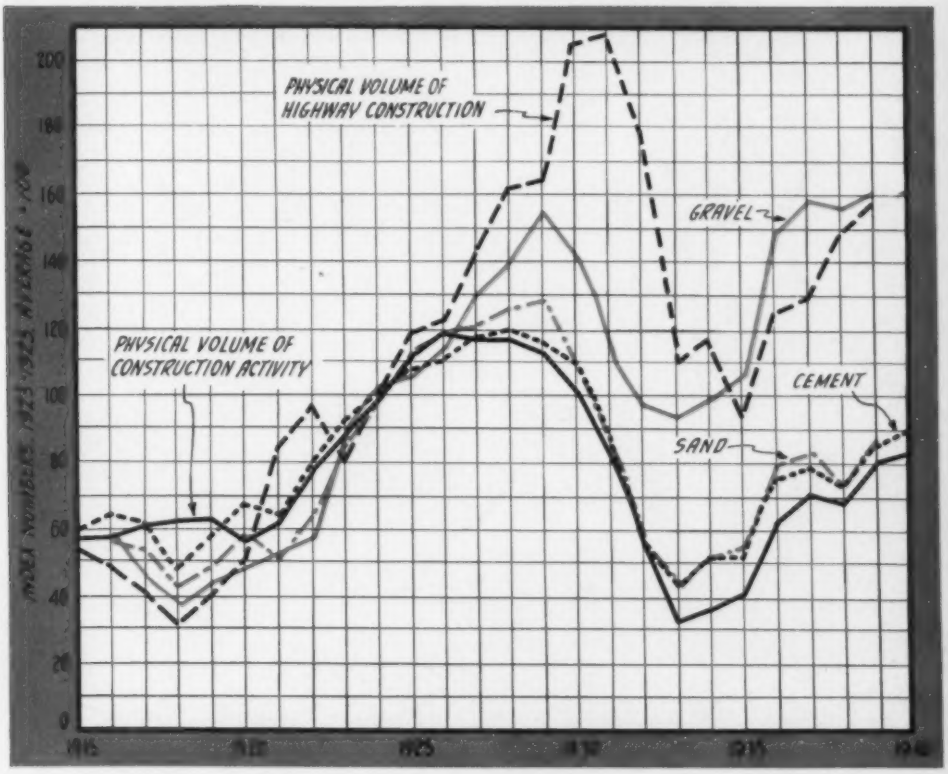


Looking down at the south plant, American Aggregates Co., near Columbus, Ohio. Note the unusual stockpiling arrangement along track and the numerous cranes and loader for yard work



Graph showing trend in sand, gravel, and cement production for the past 25 years plotted against the physical volumes of building and highway construction activities. The data was compiled by the Bureau of Mines and the Bureau of Foreign and Domestic Commerce. Sand and gravel shown in the green lines

Looking down at the south plant, American Aggregates Co., near Columbus, Ohio. Note the unusual stockpiling arrangement along track and the numerous cranes and loader for yard work



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SATISFACTORY PERFORMANCE brings *Repeat Orders*

A survey of Symons Crushers in service reveals the prevalence of repeat orders. It is common for Cone Crusher users to order a second machine because of the satisfactory performance of the original installation. It is also interesting to note the large number of major producers of crushed materials who have standardized on Symons Cones for their reduction crushing operations. One user alone has 27 Cones, another 16, another 14, while there are many crushing plants in both the metallic and non-metallic fields that have 4 to 6 Cones engaged in fine crushing work. That the use of Symons Cones has spread so rapidly throughout the world and this machine has become the accepted crusher for fine reduction work can only be accounted for in the unusual performance of these crushers.

Symons Cones are built in two types and a range of sizes suitable for plants of limited capacity up to the largest producers of crushed materials.

NORDBERG MFG. COMPANY MILWAUKEE WISCONSIN

NEW YORK	LOS ANGELES	LONDON	TORONTO
60 East 42nd Street	Subway Terminal Bldg.	Bush House	Concourse Bldg.

SYMONS CONE CRUSHERS

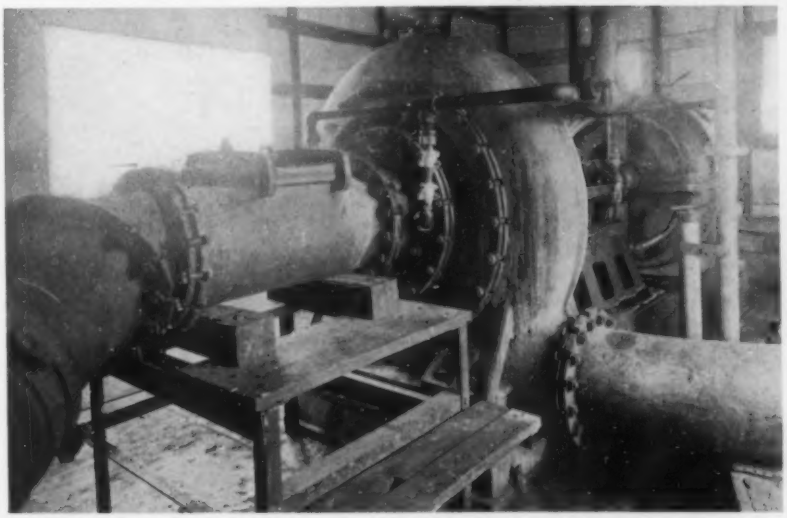
Dredge Reduces Haulage

Change from dry pit to hydraulic method of recovering sand and gravel to obtain material closer to plant

AFTER ELEVEN YEARS of operation with steam shovels to get out sand and gravel in a dry pit, the Sturm and Dillard Co., Columbus, Ohio, has changed to hydraulic pit operation at Circleville, Ohio. The dry pit plant had a 3000-ton daily capacity but during those eleven years had depleted a 25 to 65-ft. thickness of bed so that the length of haul became excessive. The other alternative, to work down below the water table, was the practice adopted in 1939.

This plant is rather unusual in that balanced skip buckets have always been used to elevate material

Above: Close-up of new dredge, 136 ft. long, with structural steel frame at end to support cutter



Above: Counter-flow dredge pump driven by 600-hp. electric motor

vertically a height of 100 ft. to the grading screens. A 2½-cu. yd. railroad-type steam shovel, and later, a 1¾-cu. yd. steam shovel on crawlers loaded sand and gravel into 20-cu. yd. Western side-dump cars which were transported by steam locomotives and then dumped into a track hopper. The 6-ton skips, which received material from this hopper, were designed and manufactured by the Link-Belt Co. and are automatic in operation. The buckets dump into a hopper-bottomed bin from which the scalping screen is fed.

As originally designed and built, the plant had revolving screens and gyratory reduction crushers located on the ground level. It wasn't long before vibrating screens were substituted, and the crushers were re-located up in the plant to make operations just about as completely on the gravity principle as any sand and gravel plant can be. The plant has two Allis-Chalmers Newhouse (10 in. and 7 in.) gyratory reduction crushers, and uses 4- x 8-ft. Allis-Chalmers and Simplicity vibrating screens for washing and sizing of gravel. Uncrushed and crushed material can be sized separately. The revolving scalping screen has been replaced by a 4- x 16-ft. vibrating screen made from two 4- x 8's. Production is equally divided between ballast and commercial material. Concrete sand and masons sand are produced in the three sand drags. A complete description of this plant appeared in ROCK PRODUCTS, November 9, 1929, pp. 41-46.

In converting to wet pit operation, a dredge was built to produce the same tonnage as the plant was designed to handle, and material is delivered to the screening plant in such a way as to leave the main plant unchanged.

The dredge, equipped with a 16-in. Amsco counterflow pump direct-driven by a 600-hp. Westinghouse electric motor, has an Eagle Iron Works Swintek screen nozzle cutter to loosen and keep material ahead of the pump suction. Overall length of the dredge, which is of all-steel construction and floated on cylindrical pontoons, is 136 ft. of which 69 ft. is the length of the dredge proper. The cutter is 65 ft. in length.

Gravel comprises about 65 percent of the material and none of it is very large. The 16-in. suction line extends to a digging depth of 55 ft. The discharge line is also 16-in. diameter.

In operation, three cables anchored to the bank hold the dredge in a fixed position, and a Clyde 5-drum hoist driven by a 20-hp. G. E. motor does the maneuvering. G. E. transformers on board the dredge step

(Continued on page 64)

A 1000-Ton Per Hour

Add three new gyratory crushers; purchase nine 5-ton dump trucks for pit haulage in second year of operation

Four conveyors handle material from pit to finished ballast storage, including the conveyor which returns oversize from the screening plant to the crushing plant

IN MARCH 1940 the Union Pacific Railroad Co. awarded to the Utah Sand and Gravel Products corporation a contract for the erection and operation of a modern gravel ballast plant. The plant is situated on Union Pacific Railroad property, within railroad yard limits at Evanston, Wyoming.

The property on which the ballast plant is located contains an immense deposit of gravel, very hard in nature, and sized such that a large percentage of crushed aggregate is secured in a finished ballast product. The pit in general contains a very high percentage of aggregate ranging in size from approximately 1½ in. to 8 in. The rock is more or less round in nature, and after passing through crushing equipment comes out very irregular in shape. This quality produces a finished product that ties in very well with any material minus 1½ in., which makes a high-quality ballast.

Under the contract agreement finished ballast is to be 10 percent minus 1¾ in., with all material minus ⅜ in. screened out and stockpiled. Operating on the basis of a product minus 1¾ in. the run-of-pit aggregate produces from 50 to 60 percent crushed and fractured aggregate. The percentage of crushed and fractured gravel contained in the finished product could at any time be increased considerably by reducing the maximum size of finished material. Due to the fact that a large percentage of aggregate is plus 1½-in., by reducing the maximum size of finished ballast and at a slight increase in crushing cost, a more completely crushed gravel ballast could be secured.

To provide space for erection of the plant proper, it was necessary to excavate and handle approximately 100,000 cu. yd. of material. The material excavated was placed on higher elevated ground for ease of recovery after plant operation began. The plant was designed so as to be on the floor level with grade of Union Pacific tracks. This plan makes for more economical and satisfactory pit excavation and carloading facilities.

The plant was designed and erected by engineers of the Los Angeles branch of Stephens-Adamson Manufacturing Co. in collaboration with engineers of the Utah Sand and Gravel Products Corp. It is of the most modern design and construction and is one of the largest crushed gravel ballast processing plants in the United States. The plant is designed to handle 1000 tons of pit-run material per hour, and will produce about 650 tons of finished ballast minus 1¾ in. and the balance of 350 tons represents fines minus ⅜ in., which is deposited in stock piles located parallel to pit tracks for recovery to open top gondola cars. In addition to engineering and construction service rendered by the Stephens-Adamson Manufacturing Co., almost all plant machinery and equipment is of its manufacture.

Fire-proof Plant

In general the plant is entirely of fire-proof construction, made up of concrete and steel footings, steel superstructure, steel conveyor sections, and all electric wiring is completely enclosed in conduit. The only timber used in construction is for catwalks, platforms, and pit hopper. In addition to the plant proper a job office, oil warehouse, and small repair shop were erected on the property.

In listing of plant equipment and machinery, we will progress from pit hopper to loading bins. The pit hopper is approximately 16 ft. by 22 ft. in dimension and is open top, no grizzley bars being utilized, as it was intended to drop all aggregate directly on to pit feeder due to the fact that the pit rock is very uniform in size. The maximum sized aggregate is anywhere from 8 in. to 10 in. This eliminates the need of any bar grizzley, as the crushers will handle any sized rock which has been found in the gravel deposit.

The No. 1 belt is fed with an S.-A. 48-in. heavy duty double-plated feeder of 1000 tons per hour capacity, driven by 30-hp. G.-E. Pacific reducer motor, with slow-speed shaft at 122 r.p.m. Receiving the material from the pit feeder is a 42 in. by

Primary scalping screens and crushers in the foreground; in the background is the finish screening plant followed by the loading out storage bins, and to the left, a stockpiling conveyor

Ballast Plant

By ROY SNOW*

Stockpiling conveyor and tractor equipped with bulldozer which levels off material

216 ft. conveyor belt which travels at a speed of 330 ft. per min. This conveyor is driven by a 75-hp. Fairbanks, Morse motor.

Finished ballast is dropped from No. 4 conveyor into large steel bins of tank nature. These bins when loaded have a capacity of approximately 800 tons of ballast. The bins are equipped with More bin gates operated at a central point beneath the tanks.

All conveying idlers, return rollers, head and tail ends, and steel conveyor sections were furnished by Stephens - Adamson Manufacturing Co. All motors are driven with Tex-Rope drives, with exception of motor reducer drives operating the pit feeder and the No. 5 conveyor. All motors are ball-bearing type and either semi-or fully-enclosed. This type of equipment was used due to anticipated dust conditions. All chutes utilized in plant construction were designed and furnished by Stephens - Adamson Manufacturing Co.

Close-up of screening plant showing the four large vibrating screens and the unusual chute arrangement

Power for plant operations is secured direct from a 44,000-volt line of the Utah Power and Light Co. It was necessary to construct our own pole line, a distance of approximately 2000 ft. The power voltage is reduced by a bank of three 150-hp. transformers to 440 volts. The power substation and all pole line and transmission line construction was performed by forces of the Utah Sand and Gravel Corp. In all instances electrical wiring is completely conduit and the plant can be operated from one central room. All motors are equipped with across-the-line starters of push button type.

The plant is entirely equipped for 24-hour operation, sufficient flood lighting being provided at necessary points.

Present excavation to feed the pit hopper is being done with a 1½-yd. Model 6 Northwest Diesel shovel. This unit loads into 7-cu. yd. International dump trucks, and the hopper feed is supplemented by using an RD 8 Caterpillar Dozer. The dozer is also utilized in spreading out the waste sand which is being disposed of in a stockpile.

Operating Methods and Equipment

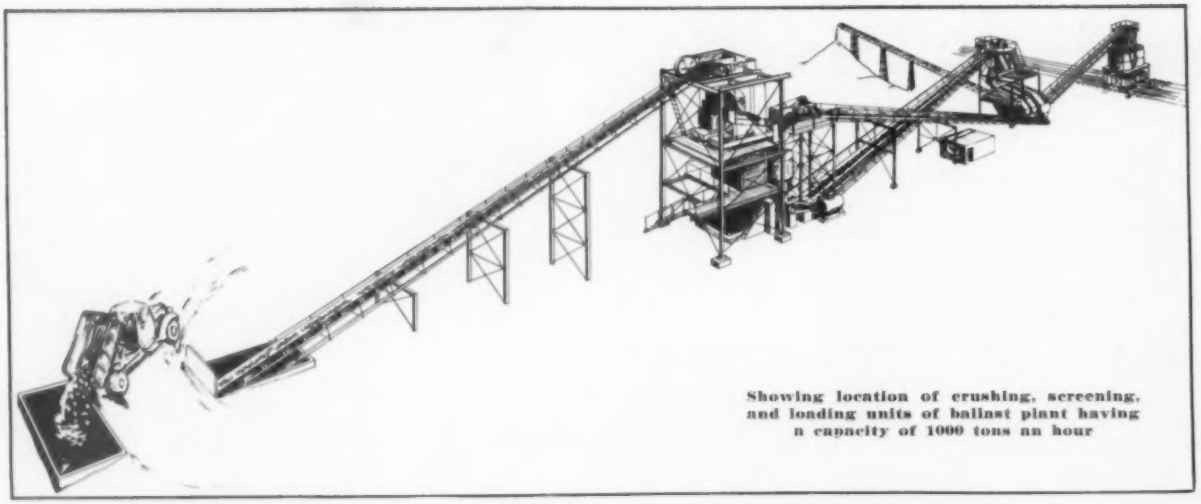
The pit feed is split at the head end of No. 1 conveyor on to two S.-A. 4 ft. by 12 ft. heavy duty double deck vibrating screens. Each screen is powered with G.-E. 10-hp. motor and drive. The oversize feed from scalping screens is dropped to a 4-ft. Type TY Traylor gyratory crusher, with discharge set at 2-in. opening. The crusher is powered with 125-hp. Fairbanks, Morse motor.

Finished aggregate from the crusher is passed on to No. 2 conveyor belt with material minus 1¾ in. direct from scalping screen. The No. 2 conveyor is 48 in. by 177 ft. and is operating at 400 ft. per min. This conveyor is powered with a 75-hp. Fairbanks, Morse motor. At the discharge end of No. 2 conveyor, the belt feed is split on to four 4 ft. by 12 ft. double-deck heavy duty finishing screens, all powered with 10-hp. G.-E. motors. All aggregate plus 1¾ in. is gathered and returned on No. 3 conveyor to the crusher. This conveyor is 24 in. by 171 ft. traveling at 300 ft. per min. It is driven with a 15-hp. Fairbanks, Morse motor. Finished ballast is taken from the bottom deck of the finishing screens and elevated to loading bins by No. 4 conveyor, 42 in. by 160 ft., traveling at 375 ft. per min., and powered with a 60-hp. Fairbanks, Morse motor.

Located parallel with screening plant is a small sand gathering conveyor which recovers all fines minus ⅜ in. in size. This conveyor is 30 in. by 40 ft. and discharges on No. 5 conveyor, 30 in. by 200 ft., 350 ft. per min. This conveyor is powered with a 50-hp. G.-E. Pacific motor reducer. This conveyor has a lift of approximately 45 ft. for stockpiling waste fines and is so equipped that it can be extended to 700 ft. or 800 ft. centers, by the addition of conveyor sections and the lengthening of the belt.

The use of shovel and trucks for pit excavation is at this time more or less necessitated due to the fact of having to provide sufficient space for stockpiling fines. For future operation it is intended to either recover material from the pit by using RD 8 Caterpillars pulling 24-cu. yd. Carryalls, or the use of a 3 to 3½ cu. yd. shovel, with some type of side-dump, rubberized, motor truck equipment. If the Caterpillar and Carryall method of excavation is finally decided upon, then it will be necessary to provide a pusher Caterpillar in loading the Carryalls. Permanent excavation equipment has

* General manager, Utah Sand and Gravel Products Corp., Salt Lake City, Utah.



Showing location of crushing, screening, and loading units of ballast plant having a capacity of 1000 tons an hour

not yet been moved on to the job, as it has been deemed advisable to study pit and aggregate conditions so as to obtain the most efficient and economical equipment for high production.

After Operation Changes

We have described the plant as built and operated for the first season. Unfortunately that is as far as many new plant descriptions go. In this case, however, we describe the changes made early this spring to increase plant capacity and efficiency.

Our original contract with the Union Pacific Railroad called for gravel ballast of 100 percent minus 1¾ in., with all material minus ½ in. screened out and stock piled. We have entered into a supplementary agreement with the Union Pacific to furnish ballast now of 100 percent minus 1½ in., with all material minus ⅜ in. screened out. The waste fines will no longer be stock piled. It was found, after last year, that the waste fines contained too much binder for proper use as stock sand.

Our new agreement specifies that we will now screen out and dispose of the waste fines in what is known as a waste sand area. This area is located about 5,000 ft. from our plant site. To accommodate this operation we constructed a tunnel approximately 100 ft. in length. The sand conveyor dumps immediately over the center of this tunnel. Trucks then enter the tunnel, receive their load of sand, proceed to waste area, dump their load, and return.

We now have installed three 4 ft. Traylor TY gyratory crushers. Last year we operated with only one crusher. Due to the very tough rock and abrasiveness we found that one crusher was not satisfactory. The three crushers now installed are of 10-in. openings. What we call our No. 1 and No. 2 crushers take the pit feed and reduce it to minus 2 in.. The rejects of the finishing screens are then returned to our No. 3 crusher, which reduces the return load to minus 1½ in.

We also have purchased and are operating our own fleet of dump trucks for pit work. We now have nine 5-ton Mack dump trucks loading under a new 2½-cu. yd. P & H Model 955 shovel. This shovel is powered with a 225-hp. Atlas slow-speed Diesel engine.

The plant, as a whole, operates in the same manner as last year. Each crusher is now powered with a 200-hp. Fairbanks, Morse, ball-bearing motor.

Takes Over Management

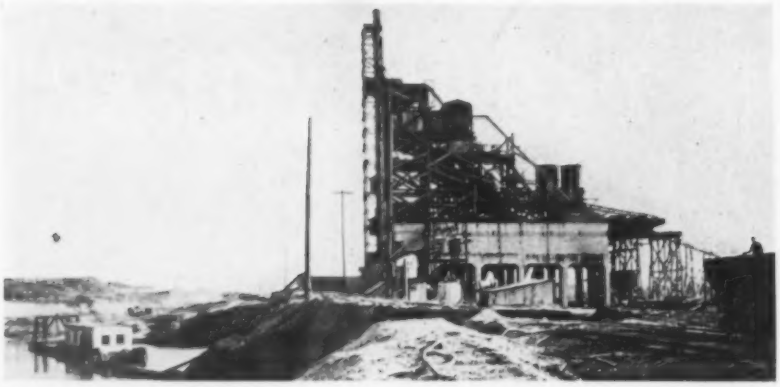
When Eric Ryberg became executive vice-president of the Utah-Idaho Sugar Co., he found it necessary to relinquish active management of the Utah Sand and Gravel Products Corp., Salt Lake City, Utah, and this job was entrusted to Roy Snow as general manager of the company. Eric Ryberg, however, continues as president of the company. A brief notice about these changes was published in the June issue of Rock Products.

Roy Snow, the new general manager and author of the foregoing article, has spent a good share of his business career with his present company. He started with the company in December, 1923, when he accepted the job of bookkeeper and accountant.

Roy Snow

In the Spring of 1929, the Stauffer Sand and Gravel Co., Salt Lake City, Utah, was purchased, at which time Mr. Snow was elected secretary-treasurer and director of the Stauffer company and also assistant secretary-treasurer of the Utah Sand & Gravel Products Corporation. Both companies were operated under the same management and, in addition to being made a corporate officer, he was appointed office manager.

He was appointed assistant general manager of the two companies in May, 1935, and was elected to the Board of Directors of the Utah Sand & Gravel Products Corporation. In January of 1939, Mr. Snow was appointed assistant secretary and treasurer of the Utah Lime & Stone Co., an affiliated crushed stone producing company, having joint offices with the sand and gravel company. On April 1, 1940, the Utah Sand & Gravel Products Corporation formed an executive committee composed of three of the directors. Roy Snow was made a member of this committee when it was formed.



Balanced skip buckets elevate material 100 ft. to the top of the screening plant, supported by reinforced concrete piers between which are tracks for loading cars

Dredge Reduces Haulage

(Continued from page 59)

down the voltage from 2300 to 440 volts for operation of the small motors.

Pump capacity varies with conditions in the deposit, but averages 360 tons per hour when pumping about 10 percent solids and against a head of 30 ft. to discharge into a hopper at the plant.

This reinforced concrete hopper, which is located where the rail hopper formerly received materials from side-dump cars, has several purposes. It receives the pump discharge direct from the discharge line which is belled out on the end to reduce the throw of material and water. Hopper capacity is 200 to 300 tons free-flowing storage that is available for filling the skip buckets through air-operated bin gates below. This capacity serves as a surge in event of a shutdown on the dredge, but normally is full or nearly so since one of its functions is to dewater the material. Water and some excess fines overflow the edge of the hopper back into the lake. In full production, material is drawn from the hopper just about as fast as the pump discharges material into it. An estimated 7000 g.p.m. of water is pumped into the hopper, most of which has to be wasted.

Skip buckets dump into a hopper over the scalping screen, just as they did in the original plant. Costs of excavating hydraulically are slightly lower than with dry excavation which required a ½- to ¾-mile haul by rail.

The 20-cu. yd. side-dump cars are used to stockpile material drawn from the bins. The plant produces ten grades of materials including two of sand. J. H. Adams is superintendent. The company operates another sand and gravel plant at Syracuse, Ind.

Operate In Tandem

(Continued from page 45)

Throughs from the vibrating screen drop into surge hoppers and are chuted directly into cars on tracks, as there is no live storage bin capacity in the plant itself. A steam locomotive crane is used to spot cars under chutes on either side of plant and to switch loaded cars to main line tracks. It has a 1¼ cu. yd. bucket which is used to unload cars into stockpiles along the tracks or to place material in two 25 cu. yd. timber bins adjacent to the track which are used for truck loading.

Principal production of this plant is in two sizes, although it may be easily changed over to produce practically any specification for coarse aggregates by the installation of different screen cloths. These sizes are 1½-in. down to ¼-in. for concrete bridges and building construction, and 2½-in. down to ¼-in. for concrete paving. A black top material ¾-in. down to 200-mesh, and a pea gravel, 5/16-in. down to 200-mesh, are also produced in quantity.

In the illustration of the plant, the upper chute to the left is used to load cars with 2½-in. down to ¼-in. material; the lower chute is for black top and servicing gravel, ¾-in. and down. To the right of the plant, centered above the track, is a wooden flume which is used in dropping pea gravel into cars through a sliding gate spout.

The plant structure is constructed with steel supporting members resting on concrete piers. Timber is used for the surge box, stairs and flumes. Electric power is received by the plant transformer substation at 6600 volts a.-c., and is stepped down to 440 volts for the various plant and dredge motors.

Another improvement at this location is the construction of a small asphalt road mix plant which is now in operation.

Officers of the company are J. F. Darby, president; A. O. Walker, vice-president and general manager; E. R. Jones, secretary; and J. M. Ragsdale, superintendent and engineer.

Surge hopper from which material is elevated to top of plant. End of discharge pipe and lip of hopper over which water is wasted may be seen to the right

Prevent Irritation Handling Rock Wool

National Safety Council points out that skin irritation from handling rock wool is caused by the quick-lime (10%), the calcium sulfide (5%), and the scratches from the sharp, slender particles. Rubber gloves and clothes and protective salves are suggested as preventive measures.

Lime Plant Improvement

Calera Lime Corp., Calera, Ala., has recently installed a new "double whizzer" Raymond separator, and a new Ingersoll-Rand Model 75, type 40, two-stage air cooled compressor for the use of jackhammer drills.

Industrial Sand Meeting Discusses Priorities

National defense creates peak demand for foundry sand; research to develop new markets

INDUSTRIAL SANDS in their relation to the national defense program, and research were the principal topics up for consideration at the sixth annual convention of the National Industrial Sand Association held June 19 and 20 at The Homestead, Hot Springs, Va.

The convention had an enthusiastic turnout for informal discussion and interpretation of the industry's position in our rapidly-changing industrial picture: Officers of the association were given a vote of confidence and appreciation and were re-elected unanimously to serve another year. L. M. Hansen, Industrial Silica Corp., Chicago, Ill., heads the National Industrial Sand Association as president. J. M. Strouse, Deckers Creek Sand Co., Morgantown, Va., is vice-president; Ralph T. Stevens, Cape May Sand Co., Cape May, N. J., treasurer; V. P. Ahearn, executive secretary; and Stanton Walker, consulting engineer. Hamilton Allport, Chicago, Ill.; E. J. Beyer, Rockwood, Mich.; C. M. Hardy, Evansville, Ind.; Mark T. McKee, Detroit, Mich.; A. J. Miller, New York, N. Y.; and W. J. Woods, Lewistown, Penn., with past-presidents A. Warsaw, Chicago, and R. G. Hay, Zanesville, Ohio, complete the Board of Directors.

President Hansen, in his opening address, commented on the accomplishments of the association since its formation five years ago. Developments of the last year, he said, showed that the organization is rapidly gaining recognition and the reports made of productive capacity and transportation requirements for the National Defense Advisory Commission have served to emphasize the industry's importance in the defense program.

It will be recalled that at the 1940 convention, in anticipation of complications arising in ways of conducting their businesses, a special committee was appointed to act for the association in defense matters. Under president Hansen's guidance, two reports were prepared and presented to the National Defense Advisory Council, one of which dealt with production capacities in the industrial sand industry and the other with transportation requirements of the several industry branches in 1941.

Since these reports were presented early in 1941, the position of the industrial sand industry has become more definite, production require-

Industrial sand producers take time out for recreation. Fig. 1, left to right: Teeing off, J. A. Crew, Zanesville, Ohio; A. J. Miller, New York, N. Y.; George Thornton, Ottawa, Ill.; and Tom Hardy, Evansville, Ind. Fig. 2: E. L. Campbell, Thayer, W. Va., facing camera, at picnic. Fig. 3: E. J. Beyer, Rockwood, Mich., waits for his steak at picnic. Fig. 4, left to right: H. F. Spier, New York, N. Y., and V. P. Ahearn; Fig. 5, below: Climax of the picnic on the grounds of The Homestead was this "get-together" party

ments have skyrocketed and priorities have come into being—factors which materially affect the industry. Individual members told of their experiences and had the opportunity to descuss their special problems with a member of the Office of Production Management who had earlier spoken on the subject of priorities.

In reporting on industry capacity, the association had gone on record with the National Defense Advisory Council as having a producing capacity 2½ times as great as 1940 production, and that the potential capacity could handle the demands. At this meeting, it was decided to advise the OPM that the industry was fast approaching an inability to meet the demands for production.

Nearing Maximum Production

Discussion developed that many producers are operating at capacity already and that coöperative fulfillment of some defense contracts might be desirable to prevent government-financed competition, in the event existing plants are unable to meet requirements. New foundries and machine shops under construction, and the advent of magnesium and aluminum castings are adding to the burden of the industry.

One producer said that in a few months his company would be unable to meet demands made upon it and that ground sand was already oversold. His intention is to go to his nearest competitor and purchase any surpluses available, for the duration of the emergency. Another suggested the possibility of getting other customers to take the more abundant grades of sand, while another suggested coöperation in the development of new formulae as a means to use the more plentiful types of sand. In his case, it is possible to take care of the basic markets and the shortage exists only among a few special grades of sand.

How Priorities Are Determined

E. E. Pratt of the Office of Production Management clarified many questions on priorities in a talk on what is being done, what is ahead and the principles and effects of imposing priorities on industry. Much of his talk was concerned with the need for priorities and with limitations imposed upon other materials than industrial sand. Priorities fall into two parts, he said, one being the assignment of priority ratings to finished materials and the other is the practical application to raw materials.

Finished materials are controlled in one of four ways. One is through the use of individual preference rating certificates, which are assigned according to Army and Navy critical lists. Another system is by blanket ratings, or general preference orders, assigned to certain manufacturers.

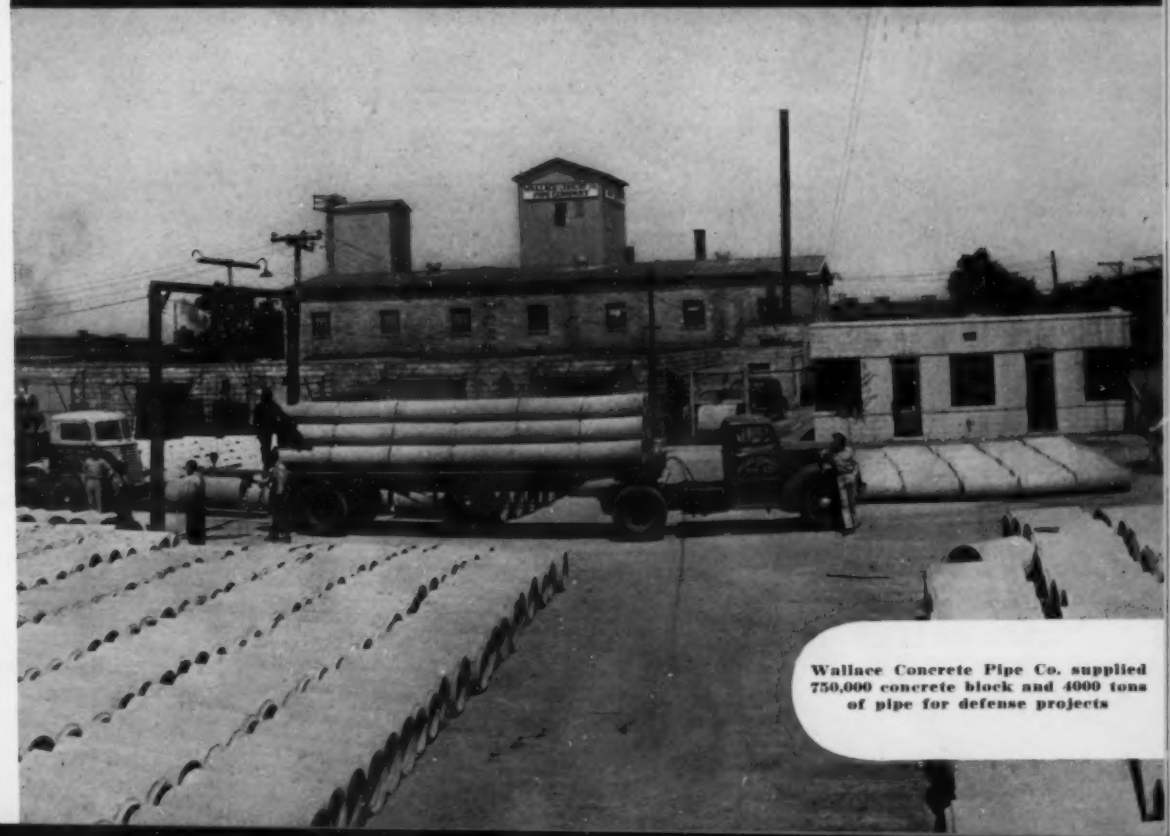
A third plan is one of project ratings which applies to specific defense projects, such as cantonments, power houses, etc. In this classification the rating applies to all the material used for the propect. A fourth basis of control is a "defense supplies rating plan," which now applies to industries supplying any type of material needed for defense where this material cannot be easily identified in the final product.

Mr. Pratt outlined how these controls over essential materials are likely to be effective in the future. As scarce materials become scarcer they will come under stricter control. It is likely, he said, that many industries will cease to exist unless they can switch to more essential lines and there is likely to be a wholesale substitution made for essential materials. There will be more spreading of the work on contracts, there will be a migration of labor and many consumer products such as automobiles are likely to go down

(Continued on page 98)

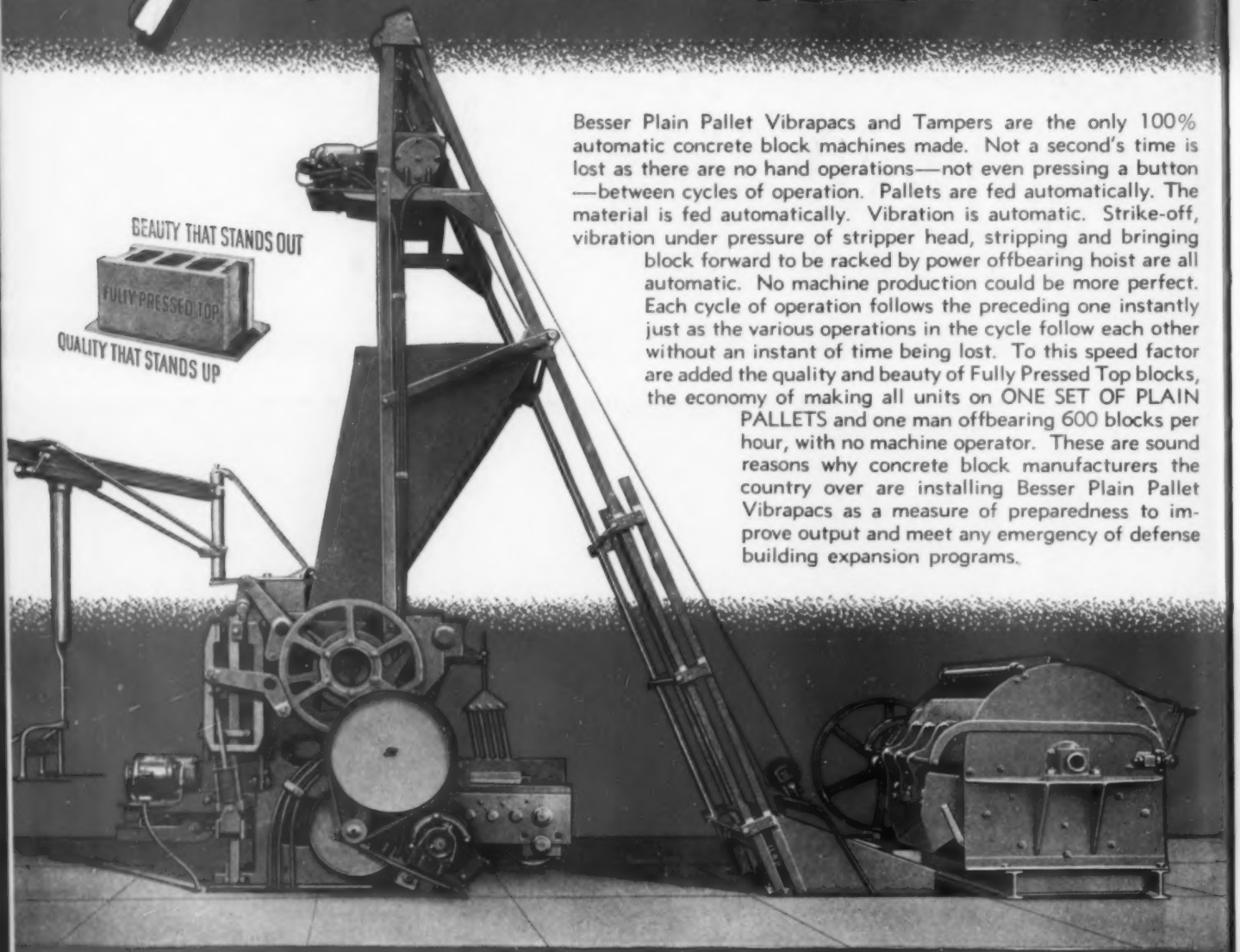
CONCRETE PRODUCTS AND CEMENT PRODUCTS

Concrete Pipe for DEFENSE



Wallace Concrete Pipe Co. supplied 750,000 concrete block and 4000 tons of pipe for defense projects

Faster and Bigger Production at Less Cost



Besser Plain Pallet Vibrapacs and Tampers are the only 100% automatic concrete block machines made. Not a second's time is lost as there are no hand operations—not even pressing a button—between cycles of operation. Pallets are fed automatically. The material is fed automatically. Vibration is automatic. Strike-off, vibration under pressure of stripper head, stripping and bringing block forward to be racked by power offbearing hoist are all automatic. No machine production could be more perfect. Each cycle of operation follows the preceding one instantly just as the various operations in the cycle follow each other without an instant of time being lost. To this speed factor are added the quality and beauty of Fully Pressed Top blocks, the economy of making all units on ONE SET OF PLAIN PALLETS and one man offbearing 600 blocks per hour, with no machine operator. These are sound reasons why concrete block manufacturers the country over are installing Besser Plain Pallet Vibrapacs as a measure of preparedness to improve output and meet any emergency of defense building expansion programs.

Besser Super Automatic Plain Pallet Vibrapac with Mixer and Skip Loader. Capacity: 600 8" x 8" x 16" per hour made 2 at a time on one plain pallet. Smaller units made in larger multiples on the same pallets.

Undirectional vibration under Flam patents (other patents pending) was employed to make the first vibrated blocks ever produced commercially. The Besser Vibrapac combines undirectional vibration with the exclusive Besser Plain Pallet principle. Users of these machines are fully protected under Besser and Flam patents.

BESSER PLAIN PALLET STRIPPERS

A Besser Plain Pallet Stripper For Every Need

TAMPERS	Besser Super Automatic	8 Hr. Capacity 3120
	Besser Victory Automatic	8 Hr. Capacity 2160
	Besser Semi-Automatic	8 Hr. Capacity 1680
	Besser Champion, Power Operated,	8 Hr. Capacity 1000 to 1200
	Besser Multi-Mold, Hand Operated,	8 Hr. Capacity 250 to 350
VIBRATORS	Besser Super Automatic Vibrapac	8 Hr. Capacity 4800
	Besser Victory Automatic Vibrapac	8 Hr. Capacity 2160
	Besser Master Vibrapac, Hand Operated,	8 Hr. Capacity 800

BESSER MANUFACTURING CO. ALPENA, MICH.

207 FORTY-FIRST STREET

Complete Equipment for Concrete Products Plants

THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

Automatic Batching For Filtration Plant

Operator on the ground controls feed to conveyor and distribution of aggregates to batching plant bins by means of push button switches and cable

Aggregates conveyor to the top of the batching plant and bulk-cement cars unlonding into hopper. Short screw moves cement to boot of bucket elevator

TO IMPROVE the quality of the water supply for Chicago's south side district, the city recently built a large filtration plant to treat the water pumped from Lake Michigan. When Michael Pontarelli & Sons received the contract to construct the plant, they turned over to the Consumers Co., Chicago, Ill., the job of providing the aggregates and the batching plant for the concrete. The result is shown in the illustrations.

This plant has several innovations in the design to meet the problems involved in furnishing large quantities of concrete in a relatively short time. It was made as nearly automatic in operation as possible. The Butler Bin Co., in cooperation with officials of the Consumers Co., designed the batching plant and furnished the equipment. Designed with a capacity to produce 4000 cu. yd. of concrete in 10 hr., the plant was never pressed for its maximum production.

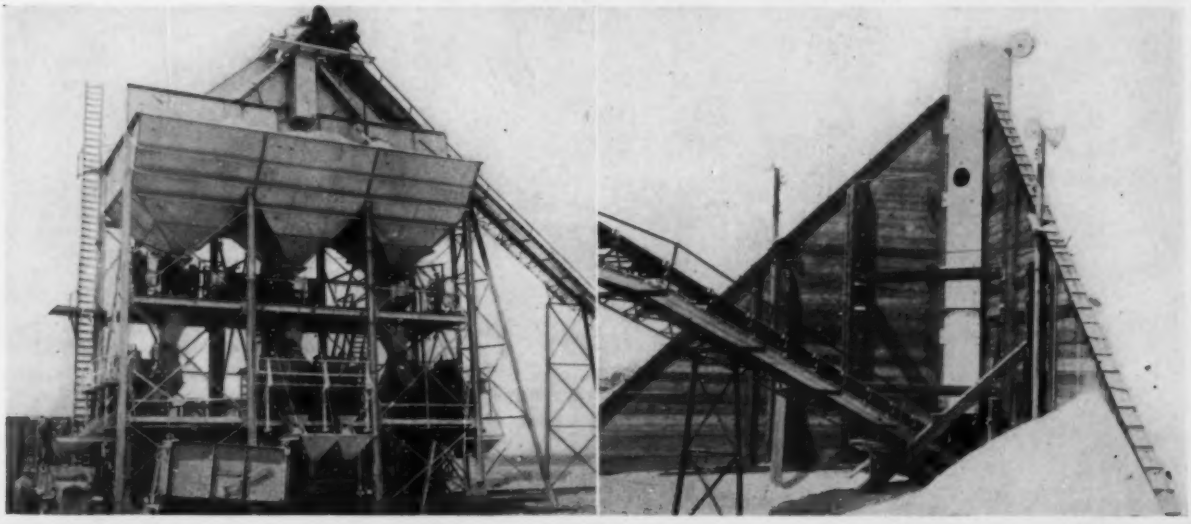
Sand and gravel was shipped in by boat from Ferrysburg, Mich., and transferred by crane from the boats to a three-segment storage system built of heavy timber, strongly braced. A wheel-controlled sliding gate feeds either sand or gravel to the inclined belt conveyor emerging from one of the storage system segments. The 36-in. Barber-Greene belt conveyor, 255-ft. centers, has a 19-deg. incline to the top of the batching plant. Operation of the conveyor is by means of an electrical push-button control. Below the conveyor is a continuous cable running around a so-called selector wheel at the feed end of the conveyor and actuating a turnhead at the top of the conveyor so that sand and gravel can be diverted to their respective steel bin compartments in the batching plant by the operator controlling the conveyor feed. The three steel bins were divided longitudinally to provide an enclosed 900-bbl. storage compartment for bulk cement on the side next to the rail siding; a center compartment holding 450 cu. yd. of gravel, and another outside compartment with a capacity of 400 cu. yd. of sand. All bins have over-and-under Bindicator controls. A red and white electric light for each compartment gives a visual indication to the conveyor operator on the ground that the bin is becoming full or empty. Similar lights were located on the batching plant platform.

Bulk cement came in special cars from Buffington, Ind. It was dumped into a hopper and fed by 12-in. screw conveyor to the boot of an enclosed bucket elevator which chuted the cement into the cement storage compartment. A 400-bbl. car was unloaded in 1½ hr.

Below the bins are three 1-cu. yd. Butler Agra-cement batchers, each with three 3000-lb. weighing beams, one tare beam and a tell-tale dial. There are also three, electrically-operated water weigh batchers.

These batchers fed the aggregate batch and water to six 1-cu. yd. Rex mixers. Each batcher had an automatic control and relay to give a proper sequence in the flow of the batch to the mixers for continuous operation. When the concrete was mixed, it was chuted into small hopper bins under which specially built trucks were driven in a steady stream to be loaded and then sent to various points of construction.

Left: Batching plant with bins divided longitudinally for cement, gravel, and sand. Each batcher feeds two 1-cu. yd. mixers. Right: Three-segment storage for aggregates. Control gate apparatus, in center, enclosed in sections of tank cars welded and rivetted together. Turnhead for chutes on top of batching plant controlled by wheel and cable from base of conveyor



General view of plant, showing under cover storage of concrete block, to the left, and hoist for loading pipe in the center

Two Big Defense Jobs

Wallace Concrete Pipe Co. produces 750,000 concrete block for defense housing and 4000 tons of pipe for army camp

By BROR NORDBERG

TWO BIG JOBS which made 1940 a record year for the Wallace Concrete Pipe Co., Columbia, S. C., involved heavy demands for concrete block to be used in construction at Fort Jackson near Columbia, S. C., and concrete pipe for highway building at Camp Croft, Spartanburg, S. C. Over 1,000,000 8- x 8- x 16-in. equivalent block were sold in 1940.

Speed in construction at both army camps was the first consideration, which meant that the utmost coordination was necessary to manufacture concrete units which would pass required standards without adding capacity to a plant for which there would be no later need.

Fortunately, the contract for about 4000 tons of concrete pipe came after the 750,000 concrete block orders had been finished. Even though the contracts came separately, fulfillment of the delivery schedules depended, in this case, on having curing facilities far better than the average which may be found in the South.

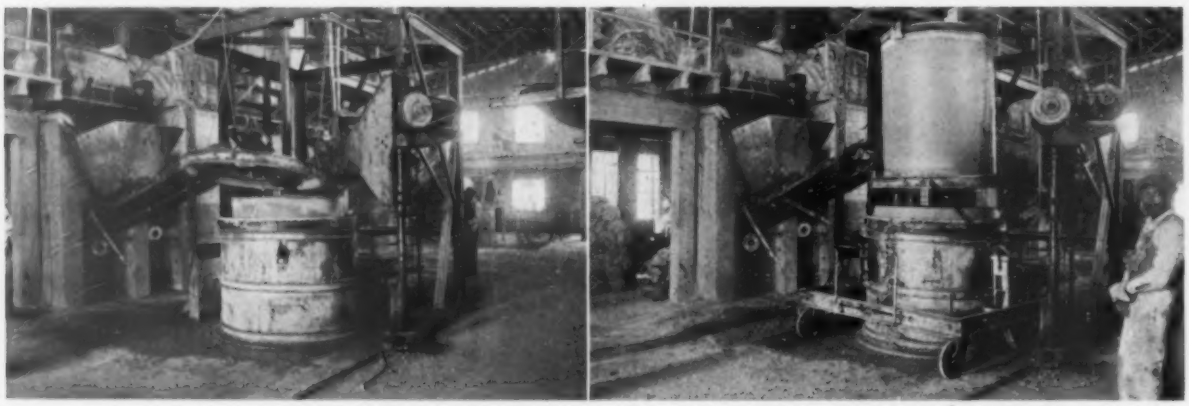
When the contract for concrete block was first awarded, it called for 190,000, 8- x 8- x 16-in. units and a stock of 50,000 in the yard was apparently sufficient, along with the production, to fill the requirements. But, just as has happened in so many of the emergency defense projects, the requirement was jumped far beyond expectations, and 750,000 concrete block had to be made and delivered in five months.

An average of 10,000 had to be delivered for each working day at the Fort. The plant went on a three-shift schedule, producing 7500 block a day, seven days a week on a single No. 7 Stearns Joltcrete vibrating machine. This machine ordinarily has a capacity of 3000 block in 8-hr. Each shift had for its quota the filling of all the pallets for 35 curing racks, each having 72 block capacity.

High-early-strength cement was used in all the block which were subjected to as high as 48 hours of continuous, intensive curing with live steam under 15 p.s.i. to 20 p.s.i. pressures. Twenty-eight day compressive test requirements were realized much earlier and deliveries were made accordingly.

Large Kiln Capacity

Wallace Concrete Pipe Co. has five 18- x 105-ft. kilns and two 8- x 30-ft. kilns. A 40-hp. stoker-fired steam boiler has sufficient capacity to keep



Left: Making large pipe on tamper machine. Note relative position of mixer and hopper to feed machine. Right: Special carriage for lifting larger size concrete pipe

live steam in the kilns at 130 deg. F. and 100 percent humidity all through the Winter months.

In manufacturing concrete pipe, completion of 36- or 48-hr. curing in these same kilns is followed by removal directly on to trucks or to yard storage, with plenty to spare in strength requirements specified by A.S.T.M. for delivery on all contracts.

Nine men worked on each shift making block, and the block were all delivered by the company direct to the exact location where they were to be laid. Most of the block were used in the construction of warehouses and for barrack foundations; all of these units being heavy block, of crushed granite and natural sand aggregates. In addition 50,000 lightweight units of Superock aggregates were manufactured for defense housing for non-commissioned officers. These units were open-textured, with very little fines, to enhance their insulation properties and bond for plaster.

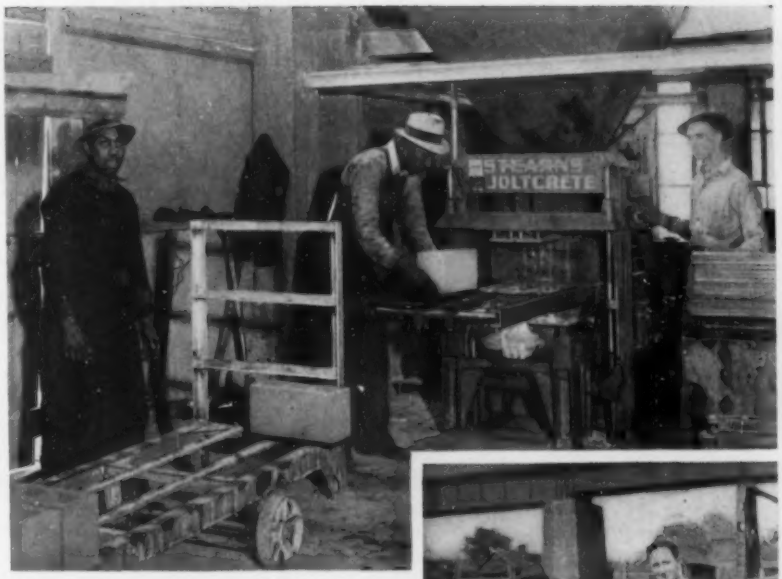
Reinforced concrete culvert pipe for highway construction at Camp Croft were from 15- to 48-in. diameters. The plant also operated night and day on this contract. Company-owned trucks delivered the pipe a distance of 100 miles. C. A. Wallace, owner, had to put in a few "licks" as a truck chauffeur himself on the night shifts.

Mr. Wallace's policy, in operating his business, is that there are three legitimate profits to be realized in running a concrete products plant. These are in the manufacture of the product, in delivering the raw materials to the plant, and the delivery of the finished product to the job.

Wallace Concrete Pipe Co. was organized in 1935 for the manufacture of concrete pipe, and pipe has always been its principal product. Before engaging in business for himself, Mr. Wallace was sales manager and vice-president of the Carolina Concrete Pipe Co. His pipe plant has probably the largest capacity of any single unit in the South, making all sizes from 4- to 48-in. diameter in both sewer and culvert pipe. Capacity is 200 tons of culvert pipe of 18- or 24-in. diameter in 8 hr. Until the last year, the concrete block business was operated on a very small scale with a hand machine.

Plant Layout

At one end of the main floor is the No. 7 Joltcrete block machine with an overhead bin and batcher, separate from the pipe manufacturing machinery. Next in line is a tamping pipe machine for which Mr. Wallace has been granted a patent. The patent is on the friction head which regulates the force of the tamping blows by a remote control lever. The tamper strikes 600 blows a minute. A second pipe machine is the new-type McCracken which makes pipe up to 36-in. diameter. Each machine has an individual concrete mixer on the batching floor above. A 40-cu. ft. Stearns mixer serves the block machine, one of 20-cu. ft. the "Wallace" pipe machine, and a 40-cu. ft. Besser mixer feeds the McCracken machine over a short belt conveyor, where the speed and rate of capacity may be varied.



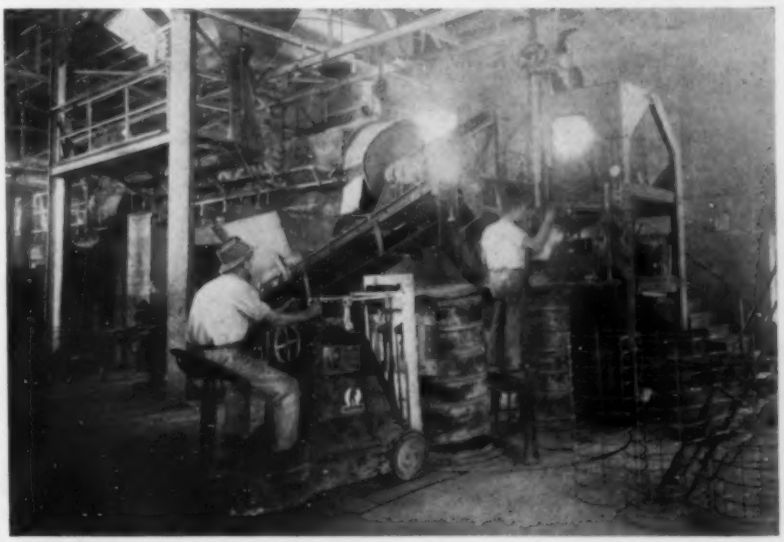
Above: Vibrating type machine producing block for defense housing project

B. K. Hiller, superintendent, left, and C. A. Wallace, president, right

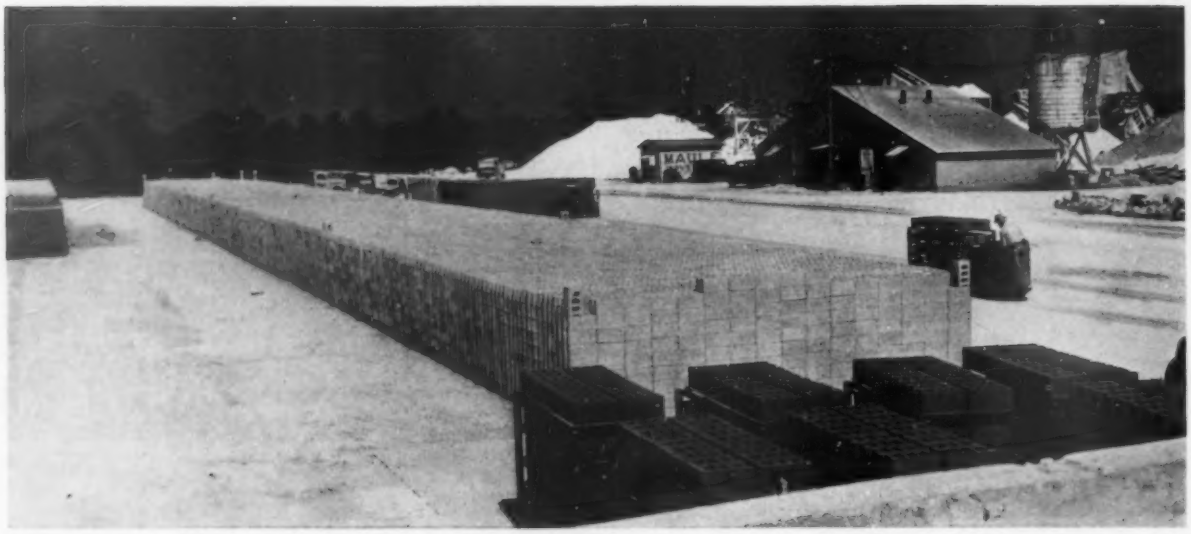
For the manufacture of concrete block, aggregates are supplied from an overhead, two-compartment bin of 25 tons capacity. This bin is equipped with measuring hoppers for volume proportioning in manufacturing lightweight units, where variable moisture makes weigh-batching impractical.

Aggregates for concrete pipe of various sizes are stocked in a four compartment, 80-ton bin, and are weighed out by a five-beam scale and delivered to the pipe machine mixers by a weigh lorry. Heavy concrete block aggregates may also be batched from this bin.

(Continued on page 78)



Lift truck used to handle pipe from packer-head machine and to place forms



General view of plant and large storage yard where 250,000 block are kept in stock. Right: power house and crushing plant

Blocks for Housing Projects

Install two high production block machines and plan to stock million units to meet federal housing demands

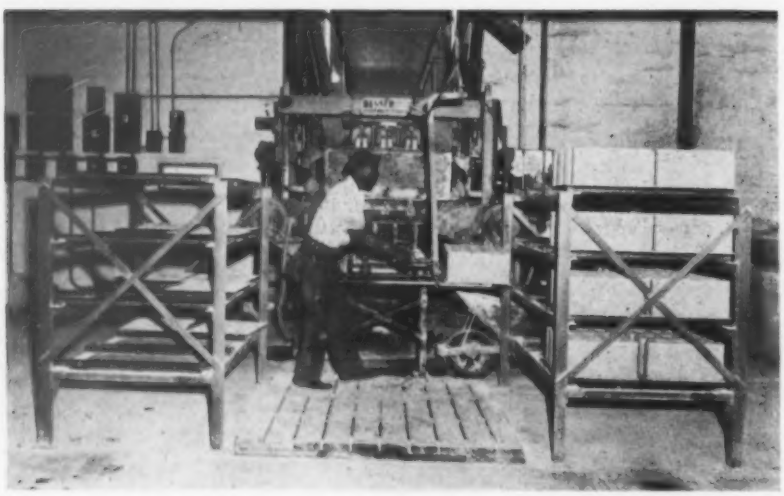
By HARRIE H. BIERMAN

CONCRETE BLOCK production at the Ojus, Fla., plant of Maule Industries, Inc., well might be captioned "For Defense." But it is more than that.

Present equipment, plus manufacturing efficiency, makes it possible for the firm to supply federal building projects with blocks in any anticipated quantity, and at the same time to furnish active private construction with its full requirements.

Early in June, the company was delivering blocks for four federal housing projects. These included two in Key West, one at Fort Lauderdale and the fourth in Miami. The latter consists of approximately 200 small duplex homes to be used in housing personnel connected with the Navy's air-training base at Opa-Locka, a suburb northwest of Miami.

In addition, the Ojus plant has kept pace with the construction of private homes, hotels, apartment houses, stores and industrial plants in a territory which extends along the Florida East Coast from Daytona Beach to Key West—a distance of over 400 miles—and as far inland as Orlando.



One of two high-production concrete block machines. All-steel rack holds 72 block

Anticipating a stepped-up demand for concrete blocks due to expanding Federal needs, the company decided early last year to modernize its block plant and equipment.

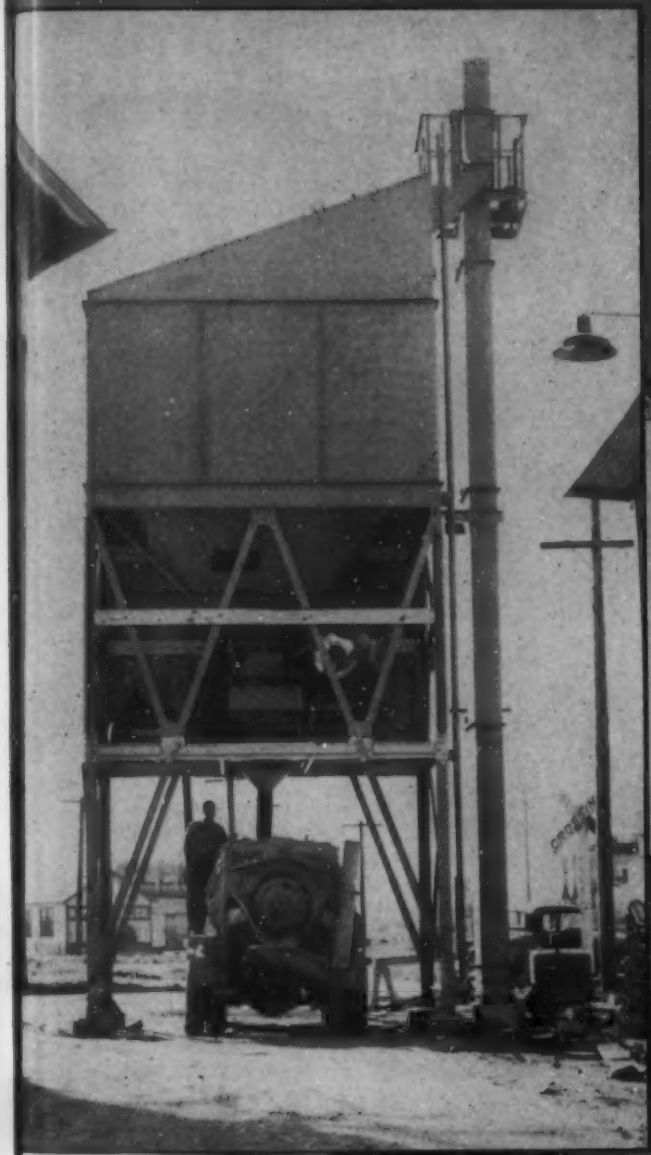
To this end the firm erected a concrete-and-steel building especially designed to meet its needs. Having ground dimensions of 100x100-ft., the structure varies in height from 20 ft. over four-fifths of its area to 40 ft. over the rear portion, which houses the block-making machinery. The main part of the building provides curing space.

From the rear of the structure to the front, which adjoins the storage yard, the concrete floor has a drop of 6 in. Therefore, the movement of blocks from the time they leave the machines until they reach the yard is entirely down-grade.

Produce 1200 Block an Hour

In its new building, completed last September, the company installed a Besser Vibra-Pac. Having a capacity of 600 standard 8-x8-x16-in. block per hour, this machine replaced

HELTZEL Bulk Cement Plant Operators Produce More Ready-Mix Concrete per Hour at a Lower Cost per Yard



Standard Equipment from 100 to 1500Bbls.

Units Available to Fit Any Yard Set-up . . .

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. . . Investigate Today . . . .

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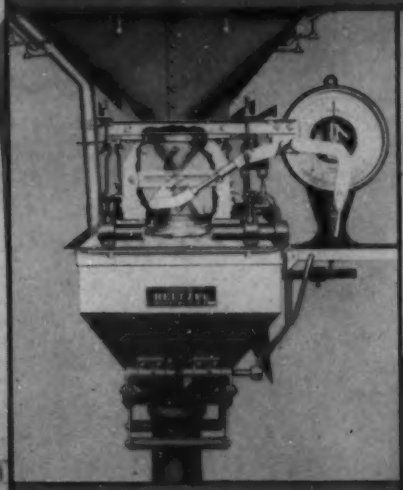
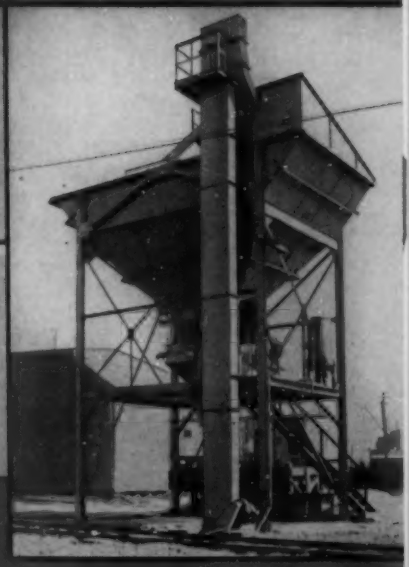
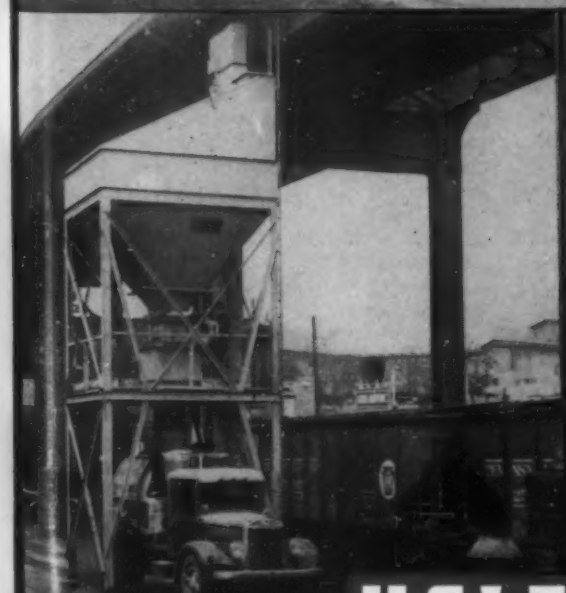


Cut away view of Heltzel Dustless Bulk Cement Batcher. Note water-tight Rubber Valve between bin hopper and batcher. All Heltzel Bulk Cement Plants are equipped with this batching unit.



Heltzel Combination Batching Plant. Accommodating 200 tons of aggregates and 325 bbls. of cement for weight batching all aggregates and cement in one operation.



Heltzel Model E-2 Semi-Portable Bulk Cement Batching Plant. 300 bbls. capacity. Note especially large driveway clearance.

Heltzel Model E-1 150 bbl. Portable Bulk Cement Plant with built-in elevator. Plant may be quickly and easily moved from one location to another without dismantling elevator casing, chain or buckets.

600 and 1500 bbl. Bulk Cement Tanks accommodating 4 grades of cement. 50 cu. ft. batchers suspended on Springless Kron Dial Scales. Tanks charged with the Heltzel Air-veyor system.

HELTZEL STEEL FORM & IRON CO.
WARREN, OHIO · U. S. A.

three tamper type machnes. In March a second Vibra-Pac was put into service. The two have an hourly production of 1200 blocks or 20 per minute.

From the machine, the blocks are transfered to an all-steel rack, which has a 72-block capacity. As rapidly as they are filled, a Clark gasoline-powered Tructractor picks up the racks and transports them to the curing section of the building. These tractors, one of which serves each of the Vibra-Pacs, are equipped with extension arms operated by a lifting mechanism.

Blocks are transferred from building to storage yard, and from one point in the yard to another with this equipment. Twelve concrete runways extending from the plant throughout the length of the yard, facilitate the movement of tractors and their loads.

One thing most likely to impress a visitor to Maule's block plant is the assembly-line precision of its operation. Blocks come from the machines and are swung to waiting racks. Tractors roll up to the racks, pick them up and wheel away. By the time the racks are full again the tractors are back for their next loads.

The Vibra-Pacs set the pace with which the rest of the routine synchronizes. Production fills a rack in 3.6 minutes. Working two 9-hour shifts, the plant now has an output of approximately 20,000 blocks per day.

Produce Its Own Electric Power

From a power standpoint it is self-maintaining. Located about a mile west of the company's supply yards and headquarters at Ojus, the plant is outside the area regularly served by the local utility. It, therefore, manufactures its own electric current for machinery and for lighting the building, storage yard and ¼-mile of highway. Three Diesel engines, a 240-hp. Fairbanks-Morse, a 125-hp. Venn-Severin and a 150-hp. Superior drive electric generators. Diesels and generators are housed in a separate building.

Aggregates used at the plant are produced so close to it that they may be said to originate on the premises. The oolite limestone rock, from which both the coarse and the fine aggregates are derived, is dug from a pit a half-mile west of the block plant and is processed across the road.

Rock larger than "pea" size, which goes into the block mix, is distributed to the company's several yards,

R. G. Williams, general manager of the company, to the left, and H. H. Lapham, production manager

where it is used in "ready mixed" concrete or sold to contractors who prefer to make their own.

For block a mix-ratio of 1:3½:3½, designed to produce a breaking-strength of 1200 lb. is used. A nationally-known engineering laboratory (Underwriters' Laboratories of Chicago) supervises the "design" and conducts monthly tests of the product to make certain that it maintains the required standard.

According to R. G. Williams, general manager for Maule Industries, blocks manufactured since the new equipment has been installed have a maximum moisture-absorption of only 8%.

Block from the machines remain in the building for 24 hours and then are moved to a spraying area in the stock yard. After seven days under the sprinklers, they age in normal atmospheric conditions for three weeks before being released for sale. The result is a product which will meet the requirements of practically any type of construction in which concrete blocks are used.

A fleet of thirty-nine 1½-ton trucks—21 Ford V-8's and 18 Chevrolets—handle most of the firm's block deliveries. Equipped with platform bodies, 25 of these trucks distribute to the company's supply-yards, while the remaining 14 deliver to customers. A normal load is 250 block. Weight-carrying portions of the chasses are reinforced to take care of the overload.

On long hauls, which can be made by water, barges are employed. This company recently sent 20 barge-loads—approximately 150,000 blocks—to Key West, a distance of about 200 miles.

During the past few years South Florida construction work under both Federal and private sponsorship has developed the habit of making sudden demands for the immediate delivery of concrete blocks in quantity. Since concrete-block construction represents the most rapid and inexpensive method of erecting "weather-proof" buildings, this situation readily is understandable.

Storage for Million Block

A "quick-delivery" order of this kind stands little chance of catching Maule at a disadvantage. At the time of writing the firm had on hand at its manufacturing plant and in its supply-yards at Ojus, Fort Lauderdale, Miami, and Miami Beach, something over a half-million block. Its inventory objective, which with its new equipment it expects to reach soon, is a stock-on-hand of 750,000 to 1,000,000 block.

While at the present time the plant is producing at the rate of 6,000,000 block per year, it can, if necessary, step up the production figure to over 10,000,000.

The plant's present block-manufacturing machinery not only turns out a product better in appearance and of greater density but, in combination with the tractors, it has effected a 40% reduction in operating personnel. Formerly it required three tamping machines to produce the volume equal to one of the Vibra-Pacs, and new block were moved around the plant by "push power."

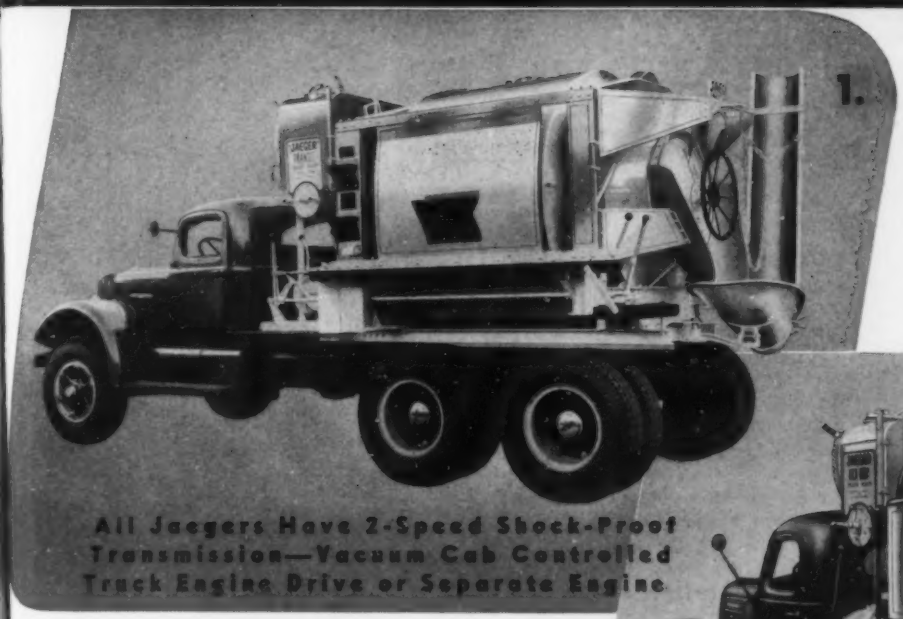
Associated in the block production end of the business with Mr. Williams are H. H. Lapham, production manager, and E. B. Mears, plant superintendent.

Defense Housing

ELEVEN MONTHS after passage of the Navy Appropriation Act, June 28, 1940, which contained a clause transforming the U.S.H.A. into a defense agency, the government has completed nearly 13,000 family dwelling units, an estimated 67,000 more are under construction, and about 100,000 dwelling contracts have been allocated. About 2000 permanent houses per week are being erected.

The first U.S.H.A. appropriation of $100,000,000, has been augmented by $140,000,000 made available last October to the FWA through the Lanham Act, and another $150,000,000 under the Lanham Act was appropriated in May of this year.

Only JAEGER Equips You to Meet EVERY Ready-Mix Demand

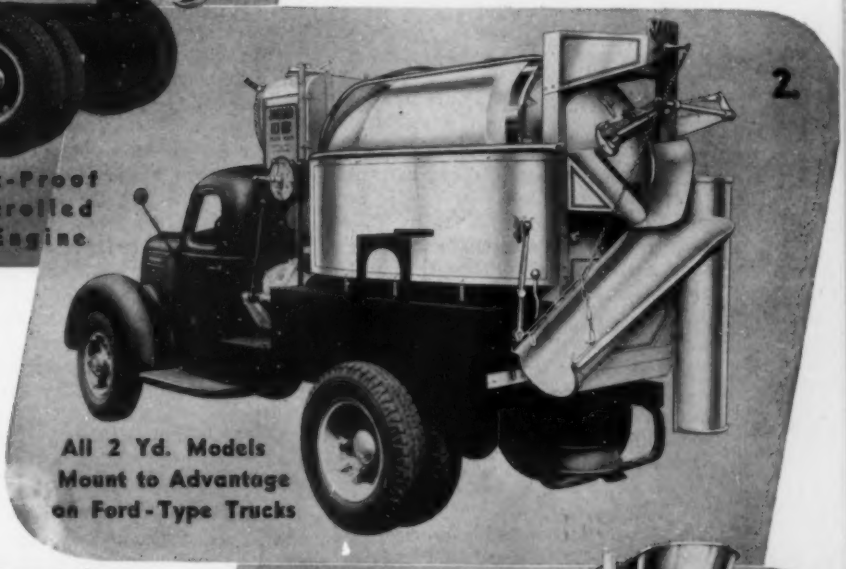


1.

All Jaegers Have 2-Speed Shock-Proof Transmission—Vacuum Cab Controlled Truck Engine Drive or Separate Engine

Standard LOW CHARGE

Type: Lowest, most economical to load; fastest on the market to mix and discharge — produce maximum daily yardage of proven higher strength concrete. Sealed drum meets any specification. Sizes 2 to 8 cu. yds.



2.

All 2 Yd. Models Mount to Advantage on Ford-Type Trucks

HIGH DUMP Types:

(2) Top Loading Models with "Sealed Drum"

(3) Or Combination Top and End Loaders (Pat'd)

Far outselling all other high discharge truck mixers today because they are fastest to load, mix and discharge any slump concrete — and are the only high discharge truck mixers that meet every specification and job condition.

"Sealed Drum" Models take full load in one quick drop through the top. Fast Vacuum-Controlled Discharge Door seals against loss of moisture and heat in winter concrete.

Jaeger End Loading Hopper Attachment (specially adapted to older or temporary plants not equipped for ribbon loading) offers many advantages over all other end loaders — and does not interfere with use of Top Loading Door where specified by engineers. (See details at right.)

Both types are built in 2, 3, 4 and 5 yd. sizes.

3.

Jaeger Charging-Discharging Hopper Attachment Permits Top or End Loading in Order to Meet Conditions - - -

The only end-loader which does not constrict drum opening and slow up charging and discharge. One quick turn of hand wheel opens Discharge Gate — no need to move entire Hopper (requiring many turns of a wheel) — no second seal to leak or wear.

JAEGER PORTABLE HOPPER

Saves Truck Mixers Waiting—Means 25% More Pay-loads per Day on Average Job. Tows to job behind truck mixer — takes full 2 or 3 yd. batches. One hopper serves almost any job.

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Send us newest information on ☐ Standard LOW CHARGE Truck Mixers, Agitators, ☐ HIGH DUMP Models, ☐ Portable Hoppers, ☐ Auto-Pavers and Spreaders, ☐ Pumps, ☐ Mixers, ☐ Hoists, ☐ Carts.

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Address_____

Small City Plants Build Successful Ready Mix Business

Planning new concrete block plant and the purchase of sand and gravel property

By GEO. EARNSHAW

Paul A. Kintz, enterprising owner of Wilson Fuel & Supply Co., Alliance, Ohio, and president of Salem Concrete & Supply Co., Salem, Ohio

MANY STORIES and descriptions of large or medium sized ready-mixed concrete plants have appeared in ROCK PRODUCTS but not so many about the small plants, which we find are slowly but surely springing up in the smaller cities. The plant of the Wilson Fuel & Supply Co., Alliance, Ohio, a city of 25,000 population and that of the Salem Concrete & Supply Co., Salem, Ohio, a town of 10,000 population, are examples of successful operations in towns of those sizes. Incidentally, their existence and success reveal the enviable imagination and enterprise of the individual who founded them.

Four years ago the building supply yard of the Wilson Fuel and Supply Co., originally opened in about 1902, was sold at auction to settle an estate. A young contractor from Canton, Ohio, Paul A. Kintz, who had done several construction jobs in Alliance, recognized Alliance's need for not only an up-to-date supply yard, but also a ready-mixed and concrete block plant. He bought the Wilson property. Conservative but sure, he put in a block plant capable of producing 1000 units per day in two shifts. It was housed in an old building on the property and consisted of only floor storage, no bins, a Blystone mixer, an Anchor stripper, cars and trackage. It is still operating but will soon be replaced with a modern plant with considerably greater capacity.

The next move made by Mr. Kintz was to put in a ready-mixed concrete plant with an approximate capacity of 100 cu. yd. per day. The Heltzel Steel Form & Iron Co. was consulted and designed a plant to fit the yard and take advantage of its conditions. That is, it was erected alongside the coal yard's unloading tipple. By cutting off one of the coal pockets, aggregate shipped in by rail is unloaded in the same way as coal and handled into the batching plant by enclosed bucket elevator. Provision was also made for unloading of aggregate, received by trucks, into the same hopper.

The batching plant is a Heltzel 75-ton, 3-compartment, type A unit equipped with a 1-cu. yd. truck mixer type batcher suspended from a dial scale. The bucket elevator is fed by gravity from a hopper located immediately beneath the railroad trestle and discharges into a chute which extends over all three compartments of the bin. The chute is equipped with baffles manually controlled from the batching platform, to feed the material into any desired compartment. After this installation was completed, Mr. Kintz found he had a demand for aggregates of various sizes to be delivered by trucks. It was not practical to batch these bulk materials through the batching plant and as a result he installed a Heltzel 90-ton, 2-compartment circular storage bin adjacent to

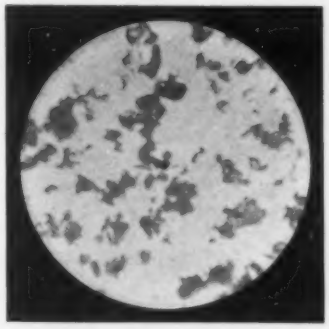
(Continued on page 78)

Left: Batching plant of the Wilson Fuel & Supply Co., Alliance, Ohio, and part of truck mixer fleet. Right: Salem Concrete & Supply Co. ready mixed concrete plant and delivery units

CEMENT DISPERSION

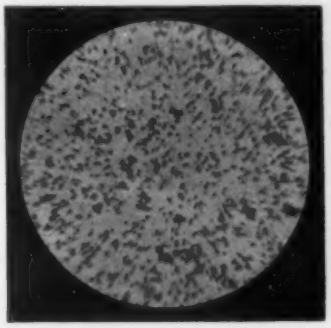
with POZZOLITH *gives Portland Cement*

MAXIMUM EFFICIENCY



UNDISPERSED
Cement in water in its normal flocculated condition.

Photomicrographs — Magnification 300



DISPERSED
Cement in the dispersed condition produced by adding a dispersing agent.

Portland cement is one of the valued inventions of mankind. The vast acreage of concrete is ample testimony to its widespread utility. But due to flocculation, it does not realize, unaided, its full possibilities.

Authorities have long known that dispersion of cement particles would greatly increase the efficiency of the cement, and augment its durability.

The discovery by the Master Builders Research Laboratories in 1930 of a practicable cement dispersing agent and its incorporation in Pozzolith made possible for the first time the application of dispersion to all types of hydraulic cement.

The past decade, devoted to introducing Pozzolith and proving its value in actual construction to engineers, contractors and owners, has firmly established its validity. The wide use of Pozzolith today, in hundreds of small private projects as well as giant defense works, is the natural consequence of this ten year record of successful performance. Contractors and builders in every field are now using Pozzolith because they know it assures them these 5 great advantages —

1. Durability increased 50% or more.
2. High early strength — 20% or more increase in compressive strength at all ages.
3. Water reduction — up to 20% — slump increased 150% or more for given water ratio.
4. Increased water-tightness — 20% or more reduction in absorption and permeability.
5. Reduced bleeding and segregation.

SPEED AND ECONOMY—

Important to all contractors and builders is the fact that in addition to the above advantages Pozzolith speeds up the job but adds no increased over-all cost and in many cases substantial savings are made.

Send for the complete story of Cement Dispersion (Research Paper No. 35), the facts about Pozzolith, and details on how to speed-up and save.

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We Refer to these Representative USERS

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2. Consoer, Townsend & Quinlan, Chicago, Illinois, 4 projects since 1930.
3. J. E. Sirrine & Co., Greenville, South Carolina, 8 projects since 1930.
4. The Erie Railroad, 9 projects since 1930.
5. The Union Pacific Railroad, 8 projects since 1930.
6. The Santa Fe Railroad, 4 projects since 1930.
7. Morris Knowles, Inc., Pittsburgh, Pennsylvania, 7 projects since 1930.
8. Burgess & Niple, Columbus, Ohio, 9 projects since 1930.
9. Robert & Co., Atlanta, Georgia, 15 projects since 1930.
10. Marsh, Smith & Powell, Los Angeles, California, 12 projects since 1930.

LARGE DEFENSE WORKS

11. Ravenna Ordnance Depot, Ravenna, Ohio, over 740,000 pounds used in exposed concrete.
12. Iowa Ordnance Depot, Burlington, Iowa, over 200,000 pounds to date in igloos and other work.
13. Douglas Aircraft Co., Inc., Long Beach, California, over 220,000 pounds in structural concrete.
14. The Aluminum Corporation, over 1,000,000 pounds used in several projects in Canada and U. S. A.

Numerous references from all districts sent on request.

MASTER BUILDERS

Small-City Plants Succeed In Ready Mix

(Continued from page 76)

the batching plant. This arrangement makes it possible to use the same unloading hopper and elevator through the use of a swiveled diversion spout. Thus both ready-mixed concrete and aggregates customers are easily and readily served.

Deliveries are made in four 2-cu. yd. Rex Motomixers, three on Ford chassis and one on an International chassis. The company has enjoyed business from all sorts of jobs, including residential, industrial plants, churches, office buildings, streets and sidewalks, far in excess of original expectations.

Increasing Demands Require New Plant

The extreme maximum of the owner's expectations came with steadily increasing orders for ready-mixed concrete from nearby small towns. Salem, 13 miles away, became a larger and larger outlet until small contractors and industrial concerns there not only welcomed but invited Kintz to build a plant. The result was the erection, in March of this year, of a complete small combination batching and aggregates plant. It consists of a 200-ton, 4-compartment aggregate bin with a 2-cu. yd. truck mixer type of batcher suspended from a Kron dial scale. Materials from the railroad cars are moved by screw conveyor to an enclosed bucket elevator from which they are distributed to the various compartments of the bin. The truck mixers are charged with cement at a different point from the batching plant by volume. The 2-cu. yd. Rex Motomixers, one on a Dodge and the other on a Ford chassis, take care of all the deliveries. Due to the short distance between Salem and Alliance, one plant can borrow truck mixers from the other in case of orders in excess of delivery capacity.

Mr. Kintz is owner of the Alliance plant and president of the Salem concern. H. M. Butcher is secretary-treasurer and general manager of the Salem company. It is the intention of Mr. Kintz to purchase a sand and gravel property near Alliance this Fall and erect a completely modern screening and washing plant which will supply both the ready-mixed plants. At the same time, a larger and more modern concrete products plant will be built adjoining the sand and gravel plant and the present plant in Alliance will probably be scrapped or sold. All in all, the Kintz operations are certainly proof that money can be made in ready-mixed concrete in towns as small as 10,000 population.

Two Big Defense Jobs

(Continued from page 71)

Crushed granite, a bank sand that is an ideal plaster sand but deficient in coarse particles for concrete mixes, and crushed granite screenings which are needed to compensate for the shortcomings in the sand, are the principal aggregates. From 25 to 30 percent of the mix is screenings. All three are hauled in separately by a 10-cu. yd., company-owned Diamond-T end-dump truck and are proportioned at the plant. Sand is hauled a distance of eight miles, screenings two miles and crushed granite less than a mile, which is favorable from the transportation standpoint.

Self-Cleaning Aggregates Hopper

Aggregates are dumped at the plant into a "floating" hopper, which is of 10-gauge sheet metal. The hopper which is free to move is fitted with a 3500 r.p.m. electric-driven eccentric vibrator to keep the damp sand flowing into the boot of an elevator which discharges into the bins.

Curing kilns are filled by the conventional rubber-tired carts, for pipe, and a "Mobilift," gas-driven lift truck manufactured by the Vaughan Motor Co. Because of the high curing capacity in the plant, very little stockpiling is used for pipe, which meet A.S.T.M. standards as they come from the kilns.

Electric Arc Welding for Pipe Reinforcement

Reinforcing cages for concrete pipe are formed at one end of the plant. Electric arc welding is used in preference to resistance welding for spot welding, since this process adds metal rather than burning metal off. A Wilson 150-amp arc welder is used.

Pipe are handled in the yard to trucks by an overhead Cable-King, Yale electric hoist and deliveries are made in four Cummins Diesel-engine-powered flat bed trucks which haul 15 tons of pipe to the load. A Ford truck handles short hauls on local contracts.

Concrete pipe are tested for strength by a Blackhawk hydraulic jack, and concrete block are tested by an independent testing laboratory. In filling the Fort Jackson contract, five block were picked at random three times a week for test. B. K. Hiller is superintendent of the plant.

Expand Ready Mix Plant In Kansas City

J. SHAW COAL AND MATERIAL CO., Kansas City, Mo., has recently purchased 100,000 sq. ft. of land improved with a two-story warehouse to make room for additional ready mixed concrete facilities. This company, which started in the ready mixed concrete business only a year ago, has found existing plant capacity inadequate. Mr. Shaw will move his plant and coal business to the property, and expects to double his concrete batching and mixing capacity. Eight mixer trucks are now operated.

Buys Pipe Concern

MID-SOUTH CONCRETE PIPE CO., Little Rock, Ark., has been purchased by the Choctaw Culvert and Machinery Co., Memphis, Tenn. The plant represents an investment of $75,000. Mike Thomas, Little Rock, Ark., will handle sales in this territory.

Start Block Plant

HARRY SUHREN, a pioneer in the manufacture of concrete block, has opened a modern plant on Cleveland Road, Sandusky, Ohio. He operated a plant on West Monroe street for 16 years, and has retained the original name for his new concern, the Erie Cement Products Co. Production capacity will be 1600 block per day, and all block will be steam cured.

Architectural Concrete In Chicago

ARCHITECTURAL CAST STONE CO. recently obtained an order for precast slabs for use on a $40,000 auto service building on the south side of Chicago. Most of the slabs are about 6- x 8-ft., and only 2½ in. thick. The exterior surfaces have a rough texture of white aggregate. This texture is secured by brushing the surface of the concrete while it is still slightly soft to expose the particles of white stone. A white sand and white portland cement are also used. The structural details of the new building are conventional masonry, steel, and frame, but the exterior will be entirely of architectural concrete.

Holds Open House

AUSTIN CRABBS, INC., Davenport, Iowa, recently held "open house" at its concrete block plant to show architects, city officials, and contractors the operation of a Besser Super Vibrapac block machine. Other operations and samples of building units were demonstrated. An excellent turnout of guests indicated the value of these demonstrations.

NEW MACHINERY * NEW EQUIPMENT

Loader On Pneumatic Tires

GEORGE HAISS MANUFACTURING CO., INC., New York, N. Y., in recognition of the trend toward the use of pneumatic tires, has announced that the model 80W is equipped with these tires. This recently introduced machine is the wheel-mounted counterpart of the 80 creeper-tread model. Its digging-loading mechanism is the

Large loader with pneumatic tires

same and also the loading capacity, 3 to 5 cu. yd. per minute, in heavy duty work up to the handling of the larger sizes of crushed stone.

Weighing 20,000 lb., this model has 9.00-20 single tires in front and dual tires of the same size in the rear, all carrying approximately equal loads.

Road speed is up to 5½ miles per hour. Two speeds are provided both forward and reverse. Power crowding drive is geared for 18.6 ft. per minute. The model 80 is powered with a 50 hp. gasoline motor. It is designed to provide a 11 ft. 4 in. clearance under the discharge chute at a 35 deg. setting which takes care of the high truck bodies now commonly employed. At a 50 deg. discharge angle setting of the chute, the clearance is 10 ft.

Cement Cooler

THE FULLER CO., Catasauqua, Penn., has announced a new cooler for portland cement and other pulverized materials which has been designed especially to cool freshly ground cement to satisfactory shipping temperatures. These coolers comprise assemblies of parallel units to meet any capacity requirement, each unit having a capacity of 50 bbl. of cement an hour.

Temperature drops ranging from 100 deg. to 150 deg. F., depending upon initial cement temperatures, are reported from coolers in commercial service. The cooling water supply, at normal temperatures, averages 2800 gal. per 100 bbl. Power consumed in driving the coolers ranges between 8 and 9 hp. per 100 bbl.

The vertical height of the cooler assembly has been kept low to adapt it for installation between mill spouts and pump hoppers or collector screws and other locations where headroom is limited.

Each unit comprises a pair of water-jacketed casings, each casing surrounding a cooling tube of wide diameter through which the cooling water also circulates. The space between the tube and jacket is narrow to expose the cement to a large area of cooling surfaces. The hot cement enters the cooler through a flanged inlet casting and is advanced through the upper casing by narrow screw flights on the cooling tube from which it discharges to the lower casing through connecting casting, the cement returning through the lower casing and discharging directly below the inlet. Each cooling tube is directly driven by a separate motor with built-in speed reducer. The internal mechanism is readily accessible. The cooler units are assembled in parallel with their inlet and discharge flanges at the same level for capacities above 50 bbl. an hour.

Transporting Concrete Block In Racks

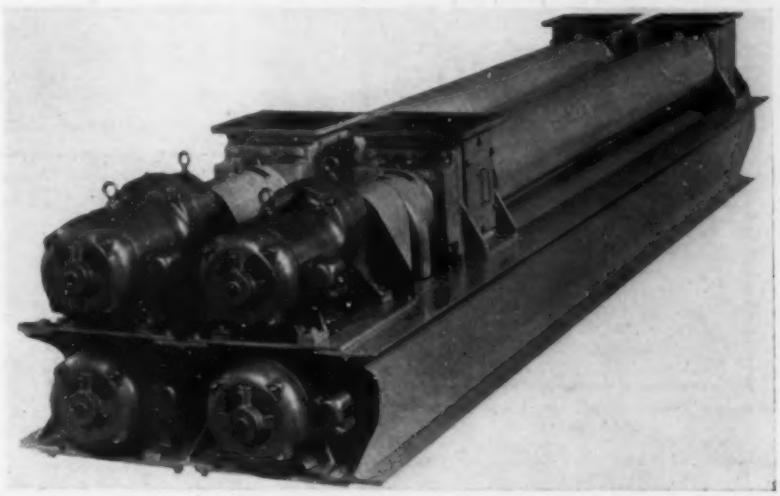
BESSER MANUFACTURING CO., Alpena, Mich., has brought out a "hinged angle block rack" for use with the

Rack will take loads five blocks in height and hold 60 block

Besser Super Vibrapac and power hoist. The more rapid concrete block production with the Vibrapac has led to the design of the new rack to facilitate the movement of block from the machine to the curing facilities and storage yard. As shown in the illustration, the plain steel pallet with blocks in any multiple rests on hinged angles of rack to form its own deck.

The pallet supports are pivoted and can be turned back to provide a clear space for lowering loaded pallets.

It is made of arc welded construction with X-brace ends and 3-in. upright channels are welded to a 3-x 4-in. horizontal angle, eliminating



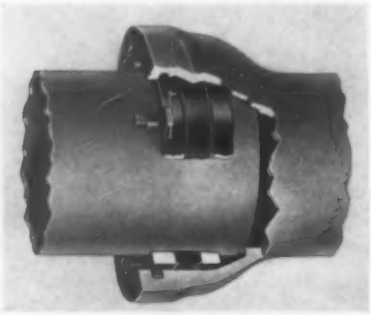
Two water-jacketed casings, each of which is surrounded by a cooling tube through which water circulates, comprise the principal units of the cement cooler

the necessity for bracing or gusseting. This construction, which requires no bracing of legs, permits transverse handling of racks with tiering trucks. It is said that racks can be tiered two high in curing rooms, height permitting, cutting curing room length.

Cast-Iron Pipe Joint

DRESSER MANUFACTURING CO., Bradford, Penn., has brought out a simple, easy-to-install mechanical joint, known as the Bellmaster, Style 85.

It is a single-gasketed, self-contained joint, consisting of an inner ring, armored gasket, outer ring, and

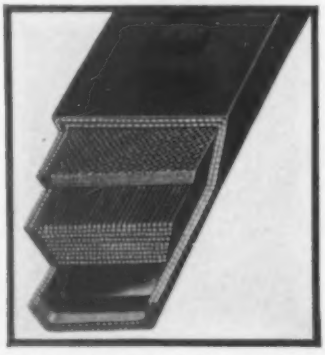


Cut-away view of flexible cast-iron pipe joint

a set of cap screws, all assembled in a single unit. To install, the joint is simply inserted in the bell end of pipe, locked in place by twisting slightly clockwise, spigot end "stabbed in," and the cap screws tightened. As the cap screws are tightened with a small ratchet wrench, the inner ring is drawn closer to the locked outer ring, thus expanding the gasket against the outside of the spigot and against the inside of the bell, making a tight seal against both.

Improve V-Belt Design

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis., has announced



Showing construction of recently designed V-belt

that all its Texrope V-belts are now of the new "Super 7" laminated design based on the Vogt formula and field experience.

The cords in the new belts are smaller, permitting the use of more cords per belt with a resulting greater strength and less stretch. Each cord is individually imbedded in heat dissipating rubber to reduce internal belt degeneration. A live rubber bottom cushion absorbs the impacts of operation. The central cord portion transmits power at the effective pitch diameter, and the bias cut fabric prevents "dishing" and assures transverse stability. A two-ply rubber-impregnated fabric cover prevents destructive agents from reaching the vital belt elements, and provides a high grip co-efficient between belt and sheave walls.

Improve Overflow Weir of Hydro Classifier

HARDINGE CO., York, Penn., has developed an improved hydro classifier. Several installations have been made in sand washing plants for washing sand free of included clay and micron sizes of sand.

The hydro classifier consists of a circular steel tank divided into two compartments, a main or upper one equipped with an adjustable overflow weir in which agitating and collecting spiral rakes operate and a conical shaped lower one where a final wash is given the product.

Various sizes of products can be made on one machine by varying the volume available for retention and at the same time the settling out period in it. This is accomplished by using a telescopic type peripheral weir, which permits varying the classifier depth from a maximum operating depth to one-half of its maximum, or at any in-between point. A sand product may be made varying anywhere from practically all plus 80-mesh to practially all plus 240-mesh by this arrangement. Extremely fine material is removed as an overflow product.

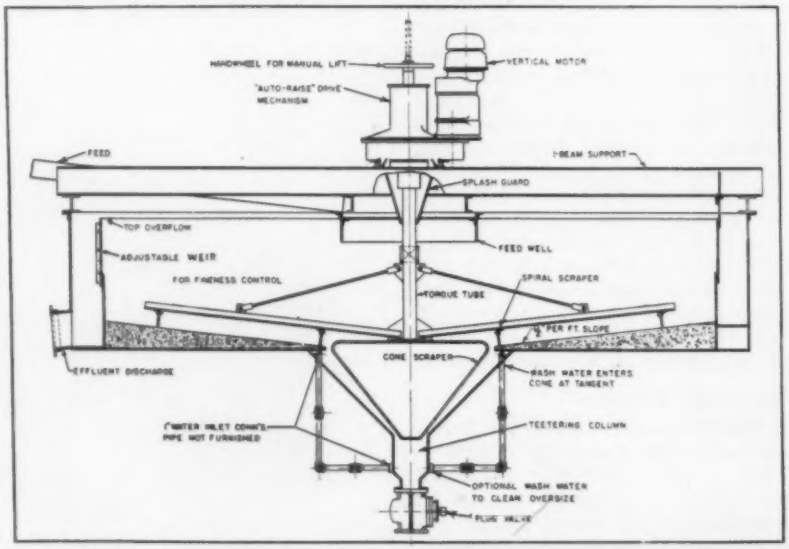
Power Control Winch

BUCYRUS-ERIE CO., Milwaukee, Wis., has brought out a complete line of single and two-drum power control

Operate cable-controlled equipment with power control winch

winches for operating cable-controlled equipment with International Trac-Tractors and other tractors.

It is claimed that with the planetary-drive winch excessive heat is eliminated. Clutch and brake drums are separate and each drum has but one heat-generating surface; bands are external and contact 93.8 percent of the full circumference of the drum, spreading friction pressures over a large area so that less heat is generated at any one spot. External clutch and brake bands are interchangeable.



Sectional elevation of hydro classifier having telescopic weir to permit adjustment to decrease the retention period to one-half the maximum or any point in between

FREE! New Literature

THE bulletins and catalogs described below are for your benefit. To save you the necessity of writing individual letters, those you want can be obtained by merely checking and mailing the coupon on next page.

1 ALL-WHEEL DRIVE. — Marmon - Herrington Co., Inc. A profusely illustrated bulletin, No. 401029-1, has been issued by this company to show the application of four-wheel drive to trucks and other vehicles with a table of specifications covering different trucks.

2 BEARINGS.—The Timken Roller Bearing Co. A beautifully illustrated, 32-page booklet has been issued to show the many applications of bearings in defense equipment and industry furnishing the sinews of war.

3 BITUMINOUS MIXERS.—Barber-Green Co. has issued a booklet illustrated in natural color photography, bulletin 842, showing views of different types of bituminous mix plants.

4 CEMENT COOLER.—The Fuller Co. has announced a new cement cooler. Details concerning this equipment may be found on the New Machinery pages of this issue.

5 COMPRESSORS. — Pennsylvania Pump & Compressor Co. has announced that it is now distributing its compressor folder, No. 193, illustrating its line of compressors and vacuum pumps. Photographs show various industry applications.

6 CONCRETE BLOCK MACHINERY.—Besser Manufacturing Co. has published several new bulletins descriptive of the latest advances in their line of automatic machinery for the production of various concrete products.

7 CONVEYORS. — Continental Gin Co., Industrial Division. Bulletin ID-103 shows a cut-away view and a drawing of the Continental belt idler with tabulations of dimensions and prices. Bulletin ID-104 illustrates the complete line of materials and power transmission equipment.

8 CRUSHER.—Nordberg Mfg. Co. Bulletin 99 describes the Symons cone crusher of the short head type. A cross-section drawing shows every detail of construction.

9 CRUSHERS.—Smith Engineering Works. Bulletin No. 265-C describes interesting applications of portable crushers with drawings to show details and tabulations are given of capacities. Catalog No. 261-M covers primary breakers and reduction crushers.

10 DRILLS.—Gardner-Denver Co. Bulletin S73 gives specifications and illustrations of the model S-73 sinking drill. Bulletin S-33 describes the features of the S33 light sinking drill, and bulletin D73 covers details of the D73—2¾-in. drifter.

11 DIESEL POWER. — Caterpillar Tractor Co. Several interesting bulletins and catalogs have been published for distribution to those interested in applications of Diesel power. "What Users Say About Caterpillar Diesel Power" is a photographic and testimonial review of users of this company's products. "Volume Boosting Power," form 6677, illustrates the many uses of Diesel engines, in tractors and for stationary power purposes, for mines, sand and gravel plants, and quarries. "The Practical Solution to the Stand-by Power Problem," form 6537, gives applications and data on the use of Diesels for this purpose. "The first 25 Caterpillar Diesels," form 6539, is an interesting historical review of these early applications of Diesel power. "Diesel Electric Sets," form 6344, gives the dimensions and specifications of the company's eight sizes of electric sets, and shows photographs of the various types.

12 DRILLS.—Hardsocg Wonder Drill Co. A loose-leaf folder has been prepared of the various bulletins describing different types of rock drills, compressors, and hose fittings.

13 DUMP BODIES.—Gar Wood Industries, Inc. Three bulletins, Nos. 7, 16, and 17, illustrate applications of hoists and dump bodies for 1½ to 2-ton trucks, Fords, and Chevrolets.

14 ELEVATOR BUCKETS.—Link-Belt Co. Folder 1912, covering malleable iron and Promal elevator buckets, has been announced. Complete price and dimensional data is included.

15 GRINDING.—Allis-Chalmers Manufacturing Co. Bulletin B6166 on crushing, grinding, screening, and mining equipment touches on the company's complete line of this machinery, but particular emphasis is given to crushing and grinding.

16 LIGHTWEIGHT CONCRETE AGGREGATE.—The Waylite Co. has brought out a folder with loose-leaf sheets on which various types of buildings using Waylite concrete units are depicted. Floor plans and features of construction are illustrated.

17 LOADER.—George Haiss Manufacturing Co. has brought out a new model 80W equipped with pneumatic tires. Details regarding this model appear on the New Machinery pages of this issue.

18 HEATING CABLE. — General Electric Co. Bulletin GEA-3539 describes the various applications of heating cable, and a tabulation and graphs show the lengths of cable recommended for the more common voltages and the resultant wattages. This information may be of value in the study of electric curing of concrete products.

19 HYDRO-CLASSIFIER. — Hardinge Co. has developed an improved hydro classifier, details of which appear on the New Machinery pages of this issue.

20 KILN ENDS. — Chicago Steel Foundry Bulletin No. 14 gives interesting data and uses of Pyrasteel, particularly its use for cement kiln ends.

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21 INSTRUMENT CONTROLS. — The Brown Instrument Co. Three new illustrated catalogs describing control equipment made by this company are of particular interest to the industry. Catalog 1104 describes and gives valuable data on the use of potentiometer pyrometers and radiamatic pyrometers, recently adapted to cement kiln controls. Catalog 15E covers millivoltmeter type pyrometers used in cement plants. Catalog 77-1 describes and illustrates industrial power units and motorized valves.

22 MOTORS, SYNCHRONOUS. — General Electric Co. has issued a booklet entitled, "How to Start and Protect a Synchronous Motor for Best Results." Interesting diagrams and drawings explain "pull-in" torque, "angle-selective" control, pull-out protection, and dual overload protection.

23 MATERIALS HANDLING. — Barrett-Cravens Co. Catalog 414 contains 100 pages of illustrations and information on materials handling equipment.

24 PARKWAY CABLES.—John A. Roebling's Sons Co. has brought out an illustrated catalog of 16 pages showing various types of electrical conductors, both metallic and non-metallic type. Tables in the catalog give the size, insulation, and maximum resistance of cables. Anyone contemplating underground cable work will find this booklet of value.

25 PIPE JOINT.—Dresser Manufacturing Co. has announced a mechanical joint of new design. Details of this equipment appear on the New Machinery pages of this issue.

26 PORTABLE PLANTS. — Universal Crusher Co. Three bulletins have been issued describing portable equipment. No. 31 describes a complete dual crusher quarry plant, No. 39-A gives applications and illustrations of dual portable crushing, screening and loading plant, primarily for sand and gravel, and No. 57 describes a portable asphalt mixing plant.

27 PORTABLE CRUSHING PLANT. — Diamond Iron Works, Inc. Bulletin 41-G shows a number of action pictures of the Rotor-Lift portable crushing and screening plants and also a table of specifications covering both single and double unit plants.

28 PORTABLE CRUSHING PLANT. — Pioneer Engineering Works. Bulletin No. 534 illustrates action pictures of the new 54-V crushing plant, and gives the specifications of the 54-V and 42-V plants.

29 POWER TRANSMISSION COUPLINGS. —The Falk Corporation has brought out bulletin No. 8100 which illustrates and describes five types of Airflex couplings to protect machinery from impacts resulting from the irregular torque characteristics of the prime mover or the driven machine.

30 PUMPS. — Allis-Chalmers Manufacturing Co. has issued a comprehensive 40-page bulletin, B-6146, descriptive of every pumping service requiring a single-stage, double-suction centrifugal pump. Information includes construction features, pump dimensions, normal, and special application data, friction tables, head-capacity tables, and other engineering data.

31 REDUCTION CRUSHER.—Traylor Engineering & Manufacturing Co. has issued bulletin 113 which describes its multi-stage, fine reduction crusher.

32 PUMPS.—Peerless Pump Co. An 8-page bulletin, No. 148, describes this company's impeller type hydro-foil pumps. These pumps are used in removing large volumes of water from sumps, deep wells, and dewatering projects of all kinds.

33 RACK FOR HAULING BLOCK.—Besser Manufacturing Co. is now marketing a "hinged angle block rack". Further details may be found on the New Machinery pages of this issue.

34 SHOVEL. — The Harnischfeger Corporation has issued a bulletin, X-20-1, describing the model 855 shovel with its new hydraulic control system.

35 SLACKLINE CABLEWAY EXCAVATORS.—Sauerman Bros., Inc. This 24-page, illustrated catalog, Section A-19, explains the operating principles of the slackline cableway excavator, and gives specifications of different size groups of these machines. Photographs show various applications in sand and gravel excavation, placer mining, and long range material handling.

36 TRANSMISSIONS, VARIABLE-SPEED. —Graham Transmissions, Inc. A new manual, No. 501, has been released that sets forth principles of metallic traction, with explanatory curves and diagrams. Complete data on this company's variable speed transmissions is given together with illustrations and notes on typical installations.

37 TRUCK MIXER CHARGING PLANT.—The Heltzel Steel Form and Iron Co. has issued a 16-page illustrated booklet, B-31, which describes different types and capacities of truck mixer charging plants which are manufactured. Drawings show elevation and plan details, and tables give capacities, elevator dimensions, etc.

38 V-BELT DATA.—The Manhattan Rubber Mfg. Division, Raybestos-Manhattan, Inc. The fourth edition of the V-Belt Engineering Data Book is now available, containing information about standard drives which eliminates the need for calculations, and a section about sheave factors and other data.

39 V-BELT.—Allis-Chalmers Manufacturing Co. has announced a v-belt having new features of construction. Details may be found on the New Machinery pages of this issue.

40 WINCH.—Bucyrus-Erie Co. A complete line of single and two-drum power control winches for operating cable-controlled equipment on tractors has been developed. Details are found on the New Machinery pages of this issue.

41 TURNTABLE CONVEYOR BELT.—The B. F. Goodrich Co. has brought out a catalog section describing the functions of its new turntable conveyor belt, details of construction, and proper method of turning the belt.

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NEWS ABOUT PEOPLE

DR. M. M. LEIGHTON, chief of the Illinois Geological Survey, has been named to serve on the newly established advisory committee on metals and minerals, created by the Office of Production Management, Washington, D. C.

•

W. O. DILL, office manager of the Radford Limestone Co., Inc., Radford, Va., since 1923, has been retired on

W. O. Dill

the company's retired income insurance plan as of June 1.

Mr. Dill has been in the crushed stone and contracting business practically all his life, and is highly respected by his associates and his many friends in the industry. It is Mr. Dill's intention to retire to his farm on the James River near Natural Bridge, Va.

•

E. M. GOULD, at one time quarry superintendent of the Marquette Cement Manufacturing Co., Cape Girardeau, Mo., has been made quarry superintendent for E. R. Holland, Fuller, Merritt, Chapman & Scott, Inc., big contractor group which has enormous contracts with the federal government for defense projects on island bases recently acquired from Great Britain.

GEOFF A. SAEGER, former chief chemist of the Gulf Portland Cement Co., now a part of the Ideal Cement Co. group, has been made general supervising chemist of the Colorado Portland Cement Co., with headquarters at Fort Collins, Colo. The Colorado Portland Cement Co. is another of the Ideal company group.

•

ROSCOE C. HOPKINS, formerly city purchasing agent of Kansas City, Mo. has been named assistant to Robert P. Lyons, vice-president and general manager of the Ready Mixed Concrete Co. Mr. Hopkins is secretary of the Purchasing Agents Association of Kansas City.

•

NORMAN E. HANSON, formerly quarry superintendent of the Sturgeon Bay Co., Sturgeon Bay, Wis., and for the past five years superintendent of operations for Basic Ores, Inc., at the company's brucite and magnesite property near Luning, Nev., has been placed in charge of the Maple Grove quarry and mills of the Basic Dolomite Co., Cleveland, Ohio, of which Basic Ores is a subsidiary.

•

JOHN T. FIERKE, Hannibal, Mo., has been elected president of the Missouri Gravel Co., succeeding James P. Pearson. C. D. Harvey, superintendent of the company's plant at La Grange, Mo., was elected first vice-president and secretary; Oscar W. Ellis was made second vice-president and treasurer; and W. B. McElhinny was elected assistant secretary.

•

R. O. DAVIES, secretary and general manager of the Kallmerten and Baer Coal Co., Mansfield, Ohio, was elected president of the Ready Mixed Concrete Association of Ohio at the recent meeting in Cleveland.

•

W. E. SAELER, credit manager and cashier of the Big Rock Stone and Material Co., Little Rock, Ark., has been named secretary of the company. M. A. Courtney, salesman, has been made sales manager.

(Obituaries on page 106)

•

LOUIS J. WILLIAMS, assistant sales manager, Pennsylvania-Dixie Cement Corp., Chattanooga, Tenn., has an unusual hobby. He makes fine bamboo fishing rods, and enjoys a nation-wide reputation for his excellent workmanship. The hobby started as a result of his offer to repair a rod belonging to a friend.

•

R. J. MORRISON has been named superintendent of the Dunbar plant of the New Castle Lime & Stone Co., succeeding A. L. Schrecengost who has been transferred to the New Castle, Penn., office. Mr. Morrison has been with the company since 1925 and for the past eight years has been located at Dunbar, serving as chief clerk.

•

ROBERT H. RADCLIFFE, JR., son of the late Robert H. Radcliff, has succeeded his father as president of Radcliff Gravel Co., Inc., Mobile, Ala. Mr. Radcliffe, who is 23 years of age, has been active in the business since he left college, the Virginia Military Institute.

Other officers of the company are Beverly R. Wilson, Jr., vice-president, and L. Worthy, secretary-treasurer.

•

ARTHUR BICK has been engaged as director of the Southeastern Lime Institute, Inc., with offices in the Citizens and Southern Bank building, Atlanta, Ga. Mr. Bick will be remembered by the old timers as an associate of Lew Johnson when the Finishing Lime Association of Ohio opened its first office in Cincinnati in 1926. He took over the Chicago office in 1929 and later was with the Metal Lath Manufacturers Association during part of 1934 and 1935. Mr. Bick returned to the Finishing Lime Association in 1937 which he left on May 1, to take his present position.

Arthur Bick, to the right, new director of the Southeastern Lime Institute, Inc.

New Plant Will Make Fine Calcium Products

COLEMAN PRODUCTS CO., Chicago, Ill., plans to set up a mill at Livingston, Mont., to make fine calcium products. Thirty-five men will be employed, producing stock minerals, poultry minerals, fertilizer, whiting and other fine calcium products required in cosmetics, rubber manufacture, and other products. Northwestern Improvement Co. will furnish travertine from the Gardiner quarry as the source of raw material. Plans also are under consideration to make white cement. Associated with Mr. Coleman in the enterprise are A. F. Titus, Chicago, manager, and M. Seibold, secretary-treasurer.

Build Flotation Unit For Magnesite

NORTHWEST MAGNESITE CO. has built a new flotation unit at the Finch quarry about five miles southwest of the company's main plant near Chewelah, Wash. The new plant went into operation early in June, and it is expected by Earl A. Garber, company manager, to increase the company's output of magnesite by about 80 percent, according to a local report. The product of the plant will be a relatively pure magnesite, suitable for use as a refractory in furnaces, for medicinal purposes, and other uses.

In the new plant, the raw magnesite rock from the quarries will be reduced in a jaw crusher to 8-in. size; then reduced in a gyratory crusher to about 3-in. size. The product of the gyratory goes to a cone crusher which reduces the rock to minus ¼-in., and it then is further reduced in a ball mill to 65-mesh. Classifiers pass the fines to flotation cells, while the coarse particles are returned to the ball mill which is in closed circuit with air separators. In the 32 flotation cells, the magnesium carbonate is separated from the impurities, and the relatively pure product goes into a thickener where excess water is removed. The product is then loaded into cars on the company's tramway and carried to the main plant where it goes directly into the kilns for burning. No changes have been made in the company's main plant.

Howard Ziebell has been in charge of the construction of the new mill, under the direction of A. C. Sargent, general mines superintendent.

Two concrete products men who need no introduction. E. W. Dienhart of the P.C.A. and assistant secretary, National Concrete Masonry Association, left; and John Chase, president of the concrete products association, taken in his office at Fort Worth, Texas

Add Crushers

BERT ROSS, owner of the stone crushing plant east of Ottawa, Kans., has remodeled his structures and has added additional crushing equipment. The plant was purchased by Mr. Ross twenty years ago, and the first product was building stone but in recent years almost the entire production has gone into a crushed product. Recent additons to crushing equipment were made necessary by increasing demands for agricultural limestone.

Many Sizes of Slag

THE BIRMINGHAM SLAG CO., Birmingham, Ala., makes 13 primary and 7 combined or modified sizes at their Ensley and Fairfield plants. These sizes range from 4-in. material down to and including fine dust.

Dust Collection

DOLCITO QUARRY CO., Birmingham, Ala., plans to install a new Sly dust collector in circuit with an Allis-Chalmers mill to collect limestone dust.

To Make Silicate of Soda

PHILADELPHIA QUARTZ CO. of California will establish a $250,000 plant in Tacoma, Wash., to manufacture silicate of soda. Various forms of silicate of soda will be manufactured, but the major market will be in supplying liquid mineral adhesive for the plywood and composition board industries of Washington and Oregon. Silica sand will be shipped here from points within the state.

More Agstone Used by Illinois Farmers

ILLINOIS farmers used a total of 2,500,000 tons of agricultural limestone in 1940, beating the 1939 record by 750,000 tons, according to an estimate made by John R. Spencer, director of the soil improvement department, Illinois Agricultural Association.

Burial Vault Factory for Green Bay, Wis.

W. E. KNUTH & SONS, Green Bay, Wis., has completed the construction of a new concrete burial vault factory. The building is 38- x 148-ft., constructed of concrete block, and is located on the highway between Green Bay and De Pere, Wis., opposite Woodlawn cemetery. The two-acre site was formerly a gravel pit which was utilized as the excavation for the basement which will house the boiler and will provide recreation rooms, lockers, showers, and dressing rooms for the employes and storage room for the trucks. The first floor will provide for office and display rooms, a casting room, and storage. Overhead traveling hoists convey the vaults from molds to stock room and to loading trucks. The front of the building, which will be known as The Knuth Wilbert Vault Works, is to be landscaped, including a fountain.

Crushing Rock for Ballast

EMIL OLSON AND SONS, Brighton, Iowa, are under contract to the M. & St. L. Railroad to furnish rock for ballast from the Lem Guy quarry. The contract calls for a minimum of 20 carloads a day, but the plant will be equipped to turn out from 30 to 35 carloads a day.

Fire Destroys Phosphate Plant

ANDERSON PHOSPHATE CO., 4½ miles from Garrison, Mont., was destroyed by fire with an estimated loss of $14,000. Fire broke out in the mill which was used to process phosphate for fertilizer, and soon spread to the adjoining warehouse.

Opens Vault Plant

E. M. DANFORD, formerly concrete vault manufacturer of Greenville, Ala., plans to establish a vault factory at Orlando, Fla. Mr. Danford recently sold his burial vault business in Greenville which he established nine years ago.

FINANCIAL NOTES

RECENT DIVIDENDS ANNOUNCED

Alpha Port. Cem.	$0.25	Sept. 25
Arundel Corp.	.25	July 1
Basic Refractories	.20	June 16
Calaveras Cement Co. pfd. (Paid $1 on arrearages on Mar. 10)	.75	June 20
Canada Cement Co., 6½% pfd.	1.25	June 20
Canada Crushed Stone	.10	June 30
Ideal Cement Co.	.35	June 30
Kelley Island L. & Tr. Co.	.25	June 30
Lehigh Port. Cement	.37½	Aug. 1
Lone Star Cement Corp.	.75	June 30
Longhorn Portland Cement Co., Com. (np)	.50	June 15
Michigan Silica Co.	.05	June 23
Penna. Glass Sand Corp.	.25	July 1
Penna. Glass Sand, pfd.	1.25	July 1
Standard Silica Corp., Com. (pl)	.20	Aug. 5
Sup. Portland Cem. Inc.	.82½	July 1
Yosemite Portland Cement Corp., pfd.	.05	July 1

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ALPHA PORTLAND CEMENT CO., Easton, Penn., had net sales of $8,053,854 for the 12 months ended March 31, 1941, as compared with $6,688,756 for a like period ended March 31 1940. Net profit for the year ended March 31, 1941, was $1,038,516 as against $675,392 for the year ended March 31, 1940.

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MATERIAL SERVICE CORP., Chicago, Ill., reported net sales of $11,228,619 for the year ended December 31, 1940. This compares with net sales of $10,846,189 in 1939. Net profit in 1940 was $663,324, after deducting for minority interest, as compared with $463,919 in 1939.

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MONOLITH PORTLAND MIDWEST CO., Los Angeles, Calif., presented the following income account for the years ended December 31:

	1940	1939
(1) Operating profit	$151,635	$120,014
Other income	2,549	7,556
Total income	154,184	127,570
Interest, etc.	12,622	10,664
Federal taxes	26,098	25,080
Net profit	115,463	91,826
Preferred divs.	51,431	52,694
Surplus for year	64,032	39,132
Earn. surp., 1-1	140,333	101,200
Credits	(2) 78,018	.....
Earn. surp., 12-31	282,383	140,333
Times pfd. divs.	0.70	0.55
Earn., pfd. share	$0.56	$0.44
(3) Earn., com. sh.	d 0.16	d 0.25
No. of pfd. shares	205,724	210,039
No. of com. shares	300,000	300,000

(1) After depreciation of plant and equipment: 1940, $91,870; 1939, $114,398, and after depletion and valuation of limestone deposits: 1940, $12,048; 1939, $10,728.

(2) Includes $66,471 depreciation and depletion adjustment.

(3) Disregarding preferred arrears.

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ARUNDEL CORPORATION, Baltimore, Md., had a net profit of $153,377 for the first quarter of 1941. This compares with $84,350 for the same period in 1940.

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FLORIDA PORTLAND CEMENT CO., Chicago, Ill., with a plant at Tampa, Fla., reports a net profit of $308,916 for the first quarter of 1941. This compares with a profit of $196,136 in the first quarter of 1940. Net sales in the first quarter of 1941 were $1,010,977 as against $709,253 in a like period in 1940.

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LEHIGH PORTLAND CEMENT CO., Allentown, Penn., reports a net profit of $2,554,152 for the 12 months ended March 31, 1941, after federal income taxes, depreciation, depletion, obsolescence, etc. This compares with $2,156,423 for the 12 months ended March 31, 1940.

Federal Contract Awards

CONTRACTS have been awarded by federal government agencies to the following companies for the period from May 12 to June 7, 1941, as reported by the Division of Public Contracts, Department of Labor:

Concrete Pipe

* Asbestos-Cement

American Concrete & Steel Pipe Co., Los Angeles, Calif., War, $50,818.

Johns-Manville Corp., New York, N. Y., War, $25,276.*

Midatlantic Concrete Pipe Products Corp., Norfolk, Va., WPA, $15,041.

American Concrete & Steel Pipe Co., Los Angeles, Calif., WPA, $88,789.

Choctaw Culvert & Machinery Co., Memphis, Tenn., WPA, $12,281.

Sherman Concrete Pipe Co., Tampa, Fla., WPA, $15,218.

Concrete Conduit Co., Ltd., Colton, Calif., War, $12,337.

(Indefinite Amount, WPA)

Baltimore Concrete Block Works, Baltimore, Ohio.

The Cincinnati Concrete Pipe Co., Cincinnati, Ohio.

Justus Concrete Pipe Co., South Zanesville, Ohio.

Lock Joint Pipe Co., Cleveland, Ohio.

Universal Concrete Pipe Co., Columbus, Ohio.

U. S. Concrete Pipe Co., Cleveland, Ohio.

Price Brothers Co., Dayton, Ohio.

The Toledo Concrete Pipe Co., Toledo, Ohio.

Union Concrete Pipe Co., Ceredo, W. Va.

Universal Concrete Pipe Co., Sandusky and Zanesville, Ohio.

United States Concrete Pipe Co., Cleveland, Ohio.

O. W. Merrell Supply Co., Columbus, Ohio.

Cement

* Indefinite.
† Producers not mentioned.

Florida Portland Cement Co., Tampa, Fla., War, $22,400.

California Portland Cement Co., Los Angeles, Calif., War, $236,550.

The Olympic Portland Cement Co., Seattle, Wash., Navy, $53,744.

Universal Atlas Cement Co., New York, N. Y., War, $13,450.

The Permanente Corp., Oakland, Calif., Interior, $15,540.

Monolith Portland Cement Co., Los Angeles, Calif., War, $116,100.

Whitehall Cement Mfg. Co., Cementon, Penn., WPA, $25,187.

Universal Atlas Cement Co., Northampton, Penn., WPA.*

Huron Portland Cement Co., Oswego, N. Y., WPA.*

Lawrence Portland Cement Co., Northampton, Penn.*

North American Cement Corp., New York, N. Y., WPA, $11,655.

Superior Portland Cement, Inc., Seattle, Wash., Navy, $67,802.

Marquette Cement Mfg. Co., Chicago, Ill., War, $102,500.

Monolith Portland Cement Co., Los Angeles, Calif., WPA, $24,450.

Keystone Portland Cement Co., Philadelphia, Penn., WPA, $11,320.

Producers Lumber Co., Tulsa, Okla., WPA, $98,325.†

Crushed Stone

The Laura Gravel & Stone Co., Phillipsburg, Ohio, War, $17,000.

General Crushed Stone Co., Syracuse, N. Y., WPA, $10,800.

Silliman and Godfrey Co., Bridgeport, Conn., WPA, $18,700.

Levy County Limerock Corp., Williston, Fla., WPA, $16,500.

J. W. & J. R. Hillstrom, Marshfield, Ore., WPA, $28,200.

Material Service Corp., Chicago, WPA, $17,737.

Greensboro Material Co., Greensboro, N. C., WPA, $34,814.

Franklin Limestone Co., Nashville, Tenn., WPA, $10,400.

Ocala Lime Rock Corp., Ocala, Fla., WPA, $49,600.

Bituminous Mixtures

OR B Road Materials, Inc., Suffern, N. Y., WPA, $51,534.

Andrews Road & Supply Co., Mineola, N. Y., WPA, $11,077.

Standard Bitulithic Co., New York, N. Y., WPA, $13,365.

Western Paving Construction Co., Denver, Colo., WPA, $10,260.

Slag

The Buffalo Slag Co., Buffalo, N. Y., WPA, $76,850.

(Continued on page 93)

BUYERS' FREE SERVICE

We are in the market for and would like to receive prices and literature on the items checked below:
RESEARCH SERVICE DEPARTMENT, *Rock Products*, 309 West Jackson Blvd., Chicago, Ill.

- ....Admixtures
- ....Aerial Tramways
- ....Aggregates (Special)
- ....Agitators
- ....Air Compressors
- ....Air Filters
- ....Air Separators
- ....Ash Receptacle Molds
- ....Asphalt Mixing Plants
- ....Batching Plants
- ....Bags
- ....Bagging Machines
- ....Balls (Grinding)
- ....Barges
- ....Batchers (Weighing)
- ....Bearings
- ....Belt Repair Equipt.
- ....Belting (Conveyor & Elevator)
- ....Bin Level Indicators
- ....Bins (Storage)
- ....Blasting Supplies
- ....Block Machines, Building
- ....Boats
- ....Brick Machines & Molds
- ....Buckets
- ....Building Tile Machines
- ....Bulk Cement Batching Plants
- ....Bulk Cement Storage Plants
- ....Bulldozers
- ....Bullscrapers
- ....Burial Vault Forms
- ....Calcining Equipment
- ....Calcium Chloride
- ....Carbon Dioxide Plants
- ....Cars (Industrial)
- ....Catch Basin Block Machines
- ....Cement Colors
- ....Cement Process
- ....Central Mixing Plants
- ....Chimney Block Mach. & Molds
- ....Clarifiers
- ....Classifiers
- ....Coal Pulverizing Equipment
- ....Concentrators
- ....Concrete Mixers
- ....Concrete Paints & Coatings
- ....Concrete Waterproofing & Dampproofing
- ....Contractors (Cement Mill)
- ....Conveyors
- ....Conveyor Idlers and Rolls
- ....Coolers
- ....Corn Crib Block and Tile Machines
- ....Correcting Basins
- ....Cranes (Crawler & Locomotive)
- ....Crushers
- ....Crushing & Screening Plants (Portable)
- ....Culvert Pipe Mach. & Molds
- ....Curing Equipment
- ....Curb Forms
- ....Derricks
- ....Dewatering Equipment
- ....Diesel Engines (Stationary & Automotive)
- ....Dippers & Teeth
- ....Disintegrators
- ....Dragline Cableway Excavators
- ....Drain Tile Machines
- ....Dredges
- ....Dredge Pumps
- ....Drills (Rock)
- ....Drill Bits
- ....Drill Sharpening Machines
- ....Drill Steel
- ....Drives (Gear Reduction)
- ....Dry Batch Conveyors
- ....Dryers
- ....Dust Collecting Systems
- ....Dust Precipitators
- ....Dust Recovery Plants
- ....Dynamite
- ....Electric Motors
- ....Electrostatic Separators
- ....Elevators
- ....Engineering Service (Consulting & Designing)
- ....Engines (Diesel, Gasoline, Steam)
- ....Feeders
- ....Floor Tile Machines
- ....Flotation Equipment
- ....Garbage Receptacle Molds (Concrete)
- ....Garden Furniture Molds (Concrete)
- ....Generators & M-G Sets
- ....Guns (Hydraulic)
- ....Gutter Block Machines (Concrete)
- ....Hoists
- ....Hoppers
- ....Hose
- ....Hydrators (Lime)
- ....Induced Draft Fans
- ....Joist & Slab Machines (Concrete)
- ....Kilns (Rotary, Shaft, Vertical)
- ....Laboratory Apparatus
- ....Lift Trucks
- ....Lime (Hydrated)
- ....Lime Handling Equip.
- ....Lime Plants
- ....Lime Putty Plants
- ....Loaders
- ....Locomotives
- ....Lubricants
- ....Manganese Steel Parts
- ....Mills (Ball, Compartment, Emery, Hammer, Rod, Roll, Tube)
- ....Mortar Mixers
- ....Pallets (Steel, Wood)
- ....Pans, Grinding (Wet & Dry)
- ....Perforated Metal
- ....Pipe (Dredge)
- ....Pipe Molds and Machines (Concrete)
- ....Plaster Mixers
- ....Pneumatic Hammers
- ....Portable Aggregate Plants
- ....Pulverizers
- ....Pumps (Pulverized Material)
- ....Railway Equipment
- ....Rectifiers
- ....Recuperators
- ....Refractories
- ....Rewashers (Screw)
- ....Rock Wool Cupolas
- ....Roofing Tile Machines
- ....Sand Dragg
- ....Sand & Gravel Plants
- ....Sand Lime Brick Machinery
- ....Sand Settling Tanks
- ....Scales
- ....Scrapers (Power Drag)
- ....Screens (Revolving, Vibrating, Etc.)
- ....Seal Rings
- ....Septic Tank Molds
- ....Sewer Pipe Machines
- ....Shovels (Power)
- ....Silos (Storage)
- ....Silo Stave Machines
- ....Slakers (Rotary)
- ....Slurry Mixers
- ....Slurry Pumps
- ....Slurry Separators
- ....Slurry Thickeners
- ....Soft Stone Eliminators
- ....Speed Reducers
- ....Structural Steel Fabrication
- ....Tampers (Hand & Power)
- ....Tanks (Storage)
- ....Tires
- ....Tractors
- ....Transit Mixers
- ....Trucks (Agitator)
- ....Trucks (Dump)
- ....Trucks (Industrial)
- ....Trucks (Mixer Body)
- ....Unloaders
- ....Unloaders (Boat)
- ....Unloaders (Box Car)
- ....V-Belting
- ....Vibrators (Bin)
- ....Wagons (Dump)
- ....Wall Forms & Machines (Concrete)
- ....Washers (Sand, Gravel & Stone)
- ....Welding & Cutting Equipt.
- ....Well Curbing Mach. & Molds
- ....Wire Cloth
- ....Wire (Copper, Iron & Steel)
- ....Wire Rope
- ....Wire Rope Fittings

City _____

Individual _____ *Title* _____

Address _____

Firm Name _____ *State* _____

Automatic Kiln Control

(Continued from page 31)

full and which are to be filled next. A push button at the panel board starts the operation of a 14-in. screw conveyor under the coal stockpile to reclaim coal into the feed hopper for the airveyor system. Another button is pressed to start coal flowing to either kiln building. Red lights show on the board when the mill feed bins in one kiln building are full. Pushing a button then causes the mechanical valve connection at the junction of the two conveyor pipelines to divert the coal into the second pipe.

When the conveyor starter button is pressed, the coal hammer mill and weightometer start to operate. When the bin being filled becomes full, a red light flashes on the board, a bell rings and the weightometer stops feeding coal into the system. A Fuller bin signal in each bin actuates the signals and prevents overfilling. When the bell rings, the operator comes to the control board, throws the valve switch, and the bell stops and the weightometer starts to feed out coal which now goes into the second conveyor line. A 24-hour record of pounds of coal delivered to each of the five bins and the total for each day is kept on the panel.

At the 12-ft. diameter coal bins in the kiln room where the automatic kilns operate, the coal stream is vented through a 6-ft. diameter Fuller cyclone and is dropped into either of the two bins. Syntron V-75 electric vibrators near the bottom of each bin are set in operation when wet coal hangs up in the bins, to keep the coal flowing into the small hoppers feeding into the coal mills.

According to D. J. Uhle, vice-president of the company, the combination of direct-firing unit mills and the new coal-handling system, along with control equipment, have materially reduced the former total coal consumption for the four kilns, and there has been an accompanying increase in production. Before these changes were made, the kilns had good efficiency, a Grudex preheater having been installed on each kiln which reduced coal consumption approximately 40 percent. These Grudex preheaters, developed by the company, utilize exit kiln gases to preheat incoming ground stone to about 1300 deg. F.

Along with a slight increase in production, the clinker is now more uniform through controlled burning. Special cements and the "new types" particularly, are manufactured at a saving in production cost. Design and construction of the entire work came under the supervision of Mr. Uhle and J. L. Hohl, plant superintendent.

Big Ready Mix Contract

THE IRONTON READY-MIX CONCRETE Co., Ironton, Ohio, which furnished all the concrete for Ironton's flood wall and has a plant located at Portsmouth, Ohio, has been awarded the contract to furnish all concrete for the flood wall at Portsmouth.

Open Tile Factory

THE PLATTE VALLEY CEMENT & TILE MFG. Co. has opened a factory in Scottsbluff, Nebr., for the manufacture of various concrete products. The company will make concrete tile for irrigation lines, concrete half tile for lining irrigation ditches and dikes, and concrete block.

Remodel Vault Plant

LAKE SHORE CEMENT BURIAL VAULTS Co., Milwaukee, Wis., has remodeled a recently purchased building which will provide improved facilities for manufacturing operations, according to H. J. McQuestion, president.

Federal Contracts

(Continued from page 90)

Cleveland Slag Co., Cleveland, Ohio, WPA, $105,015.

Cleveland Builders Supply Co., WPA, $12,163.

Rock Phosphate

International Agricultural Corp., Mt. Pleasant, Tenn., TVA, $170,000.

Hoover & Mason Phosphate Co., Mt. Pleasant, Tenn., TVA, $88,800.

Sand and Gravel

* Indefinite

Ross Island Sand & Gravel Co., Portland, Ore., WPA, $21,586.

L. M. Winford, Minden, La., WPA, $40,110.

Alexandria Gravel Co., Inc., Alexandria, La., $69,600.

Gifford-Hill & Co., Alexandria, La., $46,980.

Skousen Bros., Mesa, Ariz., WPA.*

Pioneer Sand and Gravel Co. and Glacier Gravel Co., Seattle, Wash., WPA, $20,160.

Frank Malfitano, Pittsburg, Calif., War, $15,850.

R. B. Tyler Co., Inc., Monroe, N. C., WPA, $17,110.

Concrete Gravel Co., Inc., Jackson, Miss., WPA, $59,400.

Agricultural Limestone

Indefinite Amounts, A.A.A.

* Marl

Marble Cliff Quarries Co., Lewisburg, Ohio.

Thornton Quarries Corp., Chicago, Ill.

Material Service Corp., Thornton, Ill.

Wallace Fairbanks, St. Paul, Ind.

Wm. Garner, Manilla, Ind.

Noble Co. Marl Organization, Albion, Ind.*

France Stone Co., Logansport, Ind.

Loraine Limestone Co., Loraine, Ill.

H. Vern Neil & Claud J. Rosenberg, Hastings, Mich.

Sylvester Harness, Grovertown, Ind.*

R. J. Cooney, Waukon, Iowa.

Concrete Materials & Constr. Co., Cedar Rapids, Iowa.

C. W. Miller, Independence, Iowa.

John Peyton, Troy Mills, Iowa.

Earl J. Weston, Lamont, Iowa.

Eldert Groenendyk, Bussey, Iowa.

Michigan Limestone & Chemical Co., Buffalo, N. Y.

Midwest Limestone Corp., Greencastle, Ind.

Louisville Cement Co., Speed, Ind.

Dolese & Shepard Co., Chicago, Ill.

Garden Prairie Stone Co., Marengo, Ill.

Pontiac Stone Co., Pontiac, Ill.

C. H. Spies, Benton Harbor, Mich.*

J. Brussels, Milford, Mich.*

C. Chamberlain, Davisburg, Mich.*

Perl Hooker, Highland, Mich.*

Green Lane Farm, Holly, Mich.*

E. E. Oakes, Holly, Mich.*

T. A. Fletcher, New Hudson, Mich.*

Solvay Sales Corp., Detroit, Mich.

William Danner, Rush City, Minn.*

Jos. F. Pavlovec, Fort Atkinson, Iowa.

O. F. Crookshanks, Milan, Mo.

Independent Gravel Co., Joplin, Mo.

Ready Mixed Concrete

Ready Mix & Supply Corp., Albany, N. Y., WPA, $15,987.

Watertown Builders Supply Co., Inc., Watertown, Mass., WPA, $34,450.

Ernest A. Strong and Jos. W. Grant, Springfield, Utah, War, $129,800.

Reopen Cement Mill

PACIFIC PORTLAND CEMENT CO., San Francisco, Calif., has made preparations to reopen the San Juan, Calif., plant which has been closed since 1930. The original plant was started in 1906. Actual operation did not commence until 1918, when it was opened at the Old Mission Portland Cement Co., continuing under that name until 1930 when it closed during the depression.

Rebuilding Lime Plant

CALERA LIME CORP., Calera, Ala., is rebuilding its plant which has been idle for a number of years. Fuel oil burners are being installed to fire the kilns, and it is also planned to manufacture dry ice.

Concrete Pavement Yardage

AWARDS of concrete pavement for May, 1941, have been announced by the Portland Cement Association as follows:

	Sq. Yds. awarded during May, 1941
Roads	3,424,693
Streets and Alleys	1,553,125
Airports	2,804,187
Total	7,782,005

Alkalies In Cement

(Continued from page 42)

three times. Transfer the K_2PtCl_6 in the casserole to a 250-ml. beaker and wash the casserole and the filter with hot water, receiving the washings in the 250-ml. beaker, adjust the volume to about 100 ml., and warm on the steam bath to dissolve the K_2PtCl_6. Add 1 ml. of HCl (sp. gr. 1.18) and about 0.5 g. of magnesium ribbon wrapped around the end of a stirring rod and continue to digest on the steam bath. When the action ceases or the solution becomes cloudy because of the formation of basic magnesium salts, add 2 ml. of HCl (sp. gr. 1.18). When the platinum settles and the supernatant liquid is clear, add 2 ml. more of HCl (sp. gr. 1.18), boil for several minutes, filter and wash twenty times with hot water. The paper and platinum are then ignited to constant weight in a weighed porcelain crucible.

$$\text{Percent } K_2O = \frac{\text{wt. of Pt} \times 0.4825 \times 100}{0.9}$$

Careful blanks should be run on all the reagents used, following exactly the same procedure as used in the analysis.

It should be possible, using the above method, to determine the sodium and potassium in a sample of cement in a 7-hr. day as compared with a minimum of three days required by the A.S.T.M. method.

Results

The following table gives some results obtained by this method in comparison with results obtained by other methods:

	Percent Na_2O		Percent K_2O	
	Glaze	Others	Glaze	Others
Comparative Sample No. 3 (1)	0.39	0.33 (2)	0.23	0.23 (2)
Clinker No. 6	.70	.62 (3)	.50	.52 (3)
Clinker No. 9	.79	.81 (4)	.00	.08 (4)

(1) Cement Reference Laboratory sample. (2) Averages obtained by coöperators using the A.S.T.M. tentative method. (3) ASTM tentative method, by J. J. Tregoning. (4) J. Lawrence Smith method (1-g. sample, and determining both Na_2O and K_2O), by J. J. Tregoning.

[1] Unpublished data of Insley and McMurdie, and of the Portland Cement Association Fellowship, at this Bureau.

[2] Construction and use of radiators are described on p. 33 of W. F. Hillebrand's "The Analysis of Silicate and Carbonate Rocks"—Bulletin 700 of the Department of the Interior, and on p. 22 of Hillebrand and Lundell's "Applied Inorganic Analysis."

[3] A suitable air bath is shown in Fig. 26 on p. 47 of Treadwell and Hall's "Analytical Chemistry," Vol. II (Seventh Edition).

[4] Barber and Kolthoff, J. Am. Chem. Soc. 50, 1625 (1928). Glaze, J. Am. Ceram. Soc., 14, 450 (1931).

[5] This reagent is prepared from the following solutions:

SOLUTION A	GRAMS
Uranyl acetate ($2H_2O$)	10
Acetic acid (30%)	6
Water to make	65

SOLUTION B	GRAMS
Zinc acetate ($3H_2O$)	30
Acetic acid (30%)	3
Water to make	65

After solutions A and B have been prepared (by warming), they are mixed, while warm, and allowed to stand 24 hr. A precipitate of uranyl zinc sodium acetate usually forms from the small amount of Na_2O in the chemicals used. If no precipitate forms, add (with stirring) a small crystal of NaCl and allow to stand 2 hr. Repeat until a definite yellow crystalline precipitate is obtained, thus insuring saturation of the reagent with the triple salt at room temperature. In either case, the precipitate is filtered off. When kept in Pyrex glass, the reagent does not become turbid after long standing.

[6] Hicks, J. Ind. Eng. Chem. 5, 650 (1913).

Adds Ready Mixed

JOHN B. LEGARDE, JR., Anniston, Ala., has set up a new ready mixed concrete plant which was scheduled to start operation on June 15. It is planned to operate six 2-cu. yd. mixer trucks. This company also makes concrete block, and produces sand and gravel. Fourteen trucks, ranging from 2- to 5-ton capacities, are operated. Plant power requirements are met by Caterpillar and International Diesels.

New Crushing Plant

FRANKLIN LIMESTONE CO., Nashville, Tenn., is building a new plant 4½ miles east of Waverly, Tenn. A siding and spur track, connecting with the main line of the N. C. & St. L., has been laid, and three crushers have been installed. Production capacity will be about 1000 tons a day. The company owns about 300 acres that has a strata of stone estimated to be over 75 ft. thick. J. E. Foster is in charge of the plant.

Plan Zinc-Lime Mill

S. M. NEELEY, Memphis, Tenn., who owns 628 acres of mineral land and rights in the Calamine field near Imobden, Ark., plans to erect a dual purpose mill in this vicinity which will produce ground limestone, and also mill and concentrate lead and zinc ores. It will be located at Shaft No. 1, near Black river on the outskirts of Black Rock, Ark. Limestone will be passed through the crusher and rolls and other pulverizing machinery. Crude ore will pass through the same process, but will continue through concentrating equipment.

White Cement Plant

CARRARA PORTLAND CEMENT CO., Carrara, Nev., plans to start operations early in August in its new cement plant which has been built to manufacture white portland cement from the large deposits of marble 10 miles south of Beatty, Nev.

Cement Shipments Boom

BUREAU OF MINES reports that the portland cement industry in May, 1941, produced 14,732,000 bbl., shipped 16,048,000 bbl. from the mills, and had in stock at the end of the month 22,740,000 bbl. Production and shipments of portland cement in May, 1941, showed increases of 16.6 and 21.5 percent, respectively, as compared with May, 1940. Portland cement stocks at mills were 8.2 percent lower than a year ago.

The mill value of the shipments, 25,355,000 bbl., in the first quarter of 1941, is estimated as $37,341,000. Shipments totals for the quarter include approximately 1,656,000 bbl. of high-early-strength portland cement with an estimated mill value of $3,045,000.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 160 plants at the close of May, 1940, and 156 plants at the close of May, 1941.

RATIO (PERCENT) OF PRODUCTION TO CAPACITY

	May 1940	May 1941	Apr. 1941	Mar. 1941	Feb. 1941
The month	57.8	69.4	59.3	49.8	43.4
12 months	48.1	57.4	56.5	55.6	54.4

Sand-Lime Brick Production and Shipments

EIGHT ACTIVE sand-lime block and brick plants reported for May and seven for April, statistics for which were published in June.

AVERAGE PRICE FOR MAY

	Plant Price	Delivered Price
Detroit, Mich.	....	16.00
Grand Rapids, Mich.	....	14.00
Minneapolis, Minn.	$ 9.00	11.00
Saginaw, Mich.	10.90	....
Sebewaing, Mich.	10.50	....
Syracuse, N. Y.	14.00	16.00C/L 20.00L/C

STATISTICS FOR APRIL AND MAY

	*April	**May
Production	3,357,868	3,121,700
Shipments (rail)	476,500	607,000
Production (truck)	3,406,111	2,076,252
Stock on Hand	1,431,805	1,956,369
Unfilled Orders	1,200,000	1,761,000

* Nine plants reporting: incomplete, one not reporting stock on hand and six not reporting unfilled orders.

** Eight plants reporting: incomplete, two not reporting stock on hand and two not reporting unfilled orders.

Center-Burner Fired Draw Kiln

(Continued from page 41)

plant superintendent, is standing along side. Fig. 12 shows two of the four discharge points.

The worst feature about vertical kilns is the long exposure of some faces of the lime lumps, to highest heat of the hot zone, while simultaneously other surfaces of the same lumps are shielded.

When the kiln is drawn automatically, there is a continual rearrangement, and never for longer than a few minutes does the lime lump occupy the same space and present the same exposures to the passing stream of hot gases.

In intermittently drawn kilns that are "hung," much lime is crushed during the "fall" and the charge is compacted, with the larger pieces often obstructed by the smaller, which condition remains during the full period between the draws. In consequence, the lime is not subjected equally to heat, some receiving far more, is overburned; others may pass through with considerable core. Some limes are far more fragile and spall, others have a tendency to sand, some to such an extent that serious operating difficulties develop at times so serious as to make vertical kiln operation almost impossible.

When the kiln is drawn automatically, it is seldom hung, the movement is slight and continuous, there are no crushing "falls," the amount of breakage is so small and even of what there is, it does little harm, since the smallest tends to filter ahead faster than the large lumps and it cannot collect in pockets for long to interfere with proper distribution of the gas.

An automatically drawn kiln, therefore, has freer gas passages and so it allows gases to distribute themselves more uniformly over the cross-section. If the gas stream is blocked at any one moment, in the next it most likely will again be open.

Due to this, an automatically drawn kiln will give a much higher capacity for any given draft. In proper kilns a rate of between 2500 to 3000 lb. per sq. ft. of shaft is possible and is being obtained, and this with the entirely practicable draft of between 3 and 4 in. Fuel ratio is better and the lime has a nicer appearance.

Small stone calcines far more rapidly than large, but with small stone obstructions to gas flow, stratification and draft resistance will be more of a problem, but all of these are corrected in good measure through automatic drawing of lime.

When drawing lime automatically, the heat in the hot zone will be far more uniform. Refractory walls last longer and one need not use as much of the heat tempering agents like CO_2, steam, or plain excess air. Kiln top temperatures are also equalized.

Automatic draws of all sorts were in use for many years on mixed feed kilns, but in mixed feed kilns the heat is distributed over the entire shaft cross-section, accomplished through proper distribution of coke. This is not the case with gas fired kilns where gas entry is localized. In such kilns, automatic draw would not be practicable as lime is not made uniformly over the entire cross-section, so the kiln must be "hung" and trimmed to get the well burned lime ahead of the lime with core.

However, the kiln described is different, as the gas introduction can be equalized and regulated permitting a proper amount to come in along the walls and a suitable amount through the center burner.

To have just one large shaft with an automatic draw at the base would work in a mixed feed, but not in gas kilns. There the lime at the walls

would be burned the fastest, while the middle would be drawn the quickest, and the result would be slagged walls and hard burned lime mixed with lime with lots of core.

Mechanical drawing in gas fired kilns is made possible because there is the center burner, and the cooler is divided into four independent sections, each with its own mechanical draw that can be regulated independently.

The kiln is further equipped with numerous strategically located openings permitting access to any portion of the kiln hot zone for purposes of observation or for filling in small cavities due to hangs that occur locally. These cavities form frequently and are an irritation but their objectionability is far offset by the many advantages.

Automatic draws can be regulated independently through a wide range of capacity. While one is drawing faster on a hot section, another may be drawing slower on one that is less hot, or there may be complete stoppage at any of the four sections.

The draws are also so arranged that a large bulk drawing can be made to examine conditions of the walls and of center burner as occasionally the lime may be "hung."

Preferable procedure is for each kiln to have an independent four sectional draw cart. In this way one always knows the amount of draw from either or all of the four kiln sections. However, as draw is regulated by the heat of the hot zone, the independent draw cart is not absolutely necessary.

A line on the amount of lime drawn can also be obtained from the speed and length of stroke of the draw, and control is accomplished when all four are to be varied through the speed and individually through varying their stroke.

In addition, each draw mechanism section includes a shut-off valve. Through the closing of all four sections no air can enter the cooler and with the rest of the kiln tight, the charge remains hot for days without any firing.

The draw mechanism also included control for removal of lime from different portions of the section above, but since each section is only about 3- x 5-in. with a very gradually tapered lead to the draw outlet, the downward flow is sufficiently uniform.

The combination of the Azbe kiln with this draw, brings the vertical kiln to a high degree of perfection; the submerged offtake, the mid offtake, the center burner, the quartered cooler, the automatic draw, all together make a kiln none of us could have imagined five years ago.

Industrial Sand Convention

(Continued from page 66)

in quality with the use of substitute materials.

Civilians will be limited in their luxuries, deprived of exported products and restricted in their movements very soon, as Mr. Pratt sees it. In concluding, he emphasized that the Division of Priorities intends to provide the Army and the Navy with essentials first and foremost. An effort is being made to increase the output of essentials such as doubling the nickel capacity and to encourage the use of substitutes for essential materials.

Following his remarks, special instances of inability to get essential equipment and supplies were mentioned by individuals whose companies are already affected. A New Jersey producer of industrial sand, processing about 30 percent of his output for casting airplane parts, said that the oil companies had advised him that fuel oil rationing will limit his supply to one-fourth his requirements, which are for drying sand before screening out the essential grade. Should this take effect, this operator would be unable to keep pace with the demand despite the fact that his producing capacity is sufficient. Mr. Pratt said that if a concern is operating 100 percent on defense contracts and needs replacements, the prior rating extends to the raw materials under the existing setup, and that the "repair and replacements" provisions now being worked up are for non-identifiable materials. In the case of the producer faced with an oil shortage, he said that the aircraft manufacturing company's priority rating could probably be extended to the sand producer.

Another producer, planning to build a new plant, to produce sand for aircraft castings, was unable to purchase crushers, screens, pumps and other needed equipment. He was advised to apply for a project rating, which could then be extended to cover the suppliers of essential equipment. In another case, a producer was unable to get a five dollar part for an essential electric motor, and was advised that the customer's rating could likely be extended. Mr. Pratt said that OPM was just getting into the formulation of a plan to govern similar cases and said that every attempt should be made by producers to have officials of the defense projects in question help have industrial sand placed on the critical list where such action is justifiable.

Despite defense complications the National Industrial Sand Association is contemplating an active research program designed to improve existing markets, to protect their sales against competitive materials and to develop new uses for sand. Some of the producers, recognizing the trend toward the drying of core sand, want to develop more information on that subject.

Another producer wanted to develop information as to the kind of sand most applicable to the molding of plastics, which gives promise of being a new market. Magnesium castings and other special alloys were mentioned as markets for which research is needed.

The industry has had a loss of business to permanent molds and to steel shot for abrasives, in particular, to mention a few substitutes. It was unanimously agreed that an extensive research program be adopted. The board of directors is to consider suggestions for research projects before arriving at a budget to cover the work.

Research Progress

The committee on foundry sands has been unusually active during the past year, particularly with respect to a study of test methods for foundry sands. Earlier in the year, Stanton Walker, chairman of that committee, presented the committee's findings in a paper, "Reproducibility of Tests of Foundry Sand" before the annual meeting of the American Foundrymen's Association. The committee met at the convention to discuss further the results contained in this study and to plan for other work along that line.

Through the coöperation of several laboratories, the committee set out to study what variations may be expected due to differences in equipment and testing technique.

Results of three series of tests were published in Mr. Walker's report and reprinted from the transactions of the American Foundrymen's Association for the National Industrial Sand Association. In the first series, identical samples of unbonded sand were tested for sieve analysis. Some 30 portions of four master samples of unbonded sand were tested for sieve analyses in the second series, and, in the third, two groups of master samples of bonded sand were divided into portions and tested for fineness, strength, permeability and other properties.

(Continued on page 100)

From the results obtained, Mr. Walker concluded in his report that tests applied to foundry sands are not reproducible with sufficient accuracy to permit the practical use of specifications involving narrow tolerances. It was further concluded that test procedures require further study if it is to be expected that reasonably uniform results are to be obtained by different laboratories. Tests conducted showed wide variations in results, where some uniformity should logically be the result. These discrepancies, in test results, are of utmost cencern to the industry, which is held to close tolerances by purchaser's specifications.

It was decided at the convention that the paper on the test results be re-written in simpler language, understandable by salesmen and purchasing agents, for use by the separate company sales departments. This work is projected for the coming year.

Secretary's Report

V. P. AHEARN, executive secretary, briefly reviewed the happenings in Washington and predicted how some of the developments there will affect the industrial sand industry. Mr. Ahearn opened his remarks by stating that this is the first time that the industry has had to rely so heavily upon Washington policy, and he stressed the concern of the industry for the decisions to be made by OPM in the matter of priorities.

Industrial priorities are an important factor, he said, but transportation priorities, which are likely to be effective in the Fall, will be much more drastic. However, he said that the association had accomplished much in the way of impressing upon OPM and the railroads the importance of industrial sand in the defense program, in the hope of avoiding some of the difficulties of the last world war period. It was suggested that producers get needed equipment now before more drastic priorities take effect. There will be a stoppage in coal, said Mr. Ahearn, that will be effective in the Fall.

As to wages and prices, he anticipates increases in both, with some inflation almost unavoidable. Men in authority in Washington seem to insist that labor rate increases should be taken out of profits without increased prices. He said that Washington will continue its habit of settling strikes by granting wage increases.

In discussing taxes, Mr. Ahearn quoted from a statement of John L. Sullivan, assistant Secretary of the Treasury, before the Ways and Means Committee. There are three governing principles: first, that the greater part of the cost of the emergency defense program should be met from current taxes; second, that these taxes should be collected with a minimum of interference with the mobilization of all our man power, managerial capacity, business enterprise and national resources; and, third, that the additional tax burden should be distributed equitably among the several segments of our population.

Current taxes should provide two-thirds of federal expenditures during the emergency period which would require a tax system of $12,667,000,000 based on the 19 billion expenditures indicated for the fiscal year 1942. Present taxes will yield over nine billion dollars, leaving 3½ billion to be raised by new taxes.

A shortage of skilled labor is on the horizon, said Mr. Ahearn, which makes it advisable for individual concerns to try to protect skilled men, who cannot be replaced, from the draft, in cases where their individual work is important. This shortage of labor will become more pronounced.

As to war and peace, Mr. Ahearn said nobody knows what is to happen, but the government means business and will deliver promised supplies to Britain.

THEODORE WATERS, the association counsel, briefly reviewed the year's progress in formulation of legislative codes for industry in several principal states, commenting on the foundry, stone polishing and stone crushing codes proposed in New York state.

Sidelight attractions were the presentation of a sand movie in technicolor "Sand," by Mr. A. J. Miller of Whitehead Bros. Co., New York, N. Y., and a competitive golf match on the Homestead course.

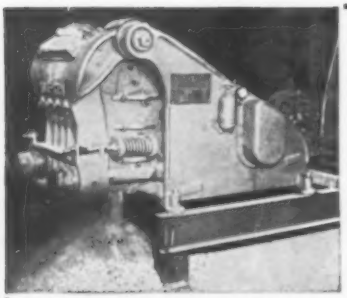
Increase Life of Concrete Silo Staves

UNIVERSITY OF MINNESOTA tests of concrete silo staves subjected to corn silage acids indicate that a saving of $15 worth of cement in a $600 to $800 silo might result in shortening the life of the silo by two-thirds.

Test results suggest that 7 or 8 standard staves instead of 11 be made from each sack of cement. While the making of 11 staves from each sack of cement will save the builder perhaps $15 on a 14- x 40-ft. silo, the resistance to acids with the richer mixture will be three times as great.

Lime Putty Added

READY-MIXED CONCRETE CO., INC., Chattanooga, Tenn. is now building a lime-putty plant.



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at less cost

KUE-KEN CRUSHER USES LESS POWER

Makes tremendous reductions

The amazing performance of this "balanced-action" crusher has set the industry talking. The silent, vibrationless mechanism runs in a cool bath of oil. Almost 100% power efficiency consequently power requirements are as little as half that of other types. Our Kue-Ken makes reductions in a single pass that would require two ordinary crushers.

One owner crushes a 55 ton carload of rock just five times as fast as with crusher previously on the job and the power used was the same employed on previous crusher. There are many more similar examples. (Names of owners sent on request.)

Write for bulletin No. 39 which gives examples of what Kue-Ken Crushers have done in the field. Give us details about your problem so we can talk intelligently to you. There is no obligation.

Send samples for Free Crushing test

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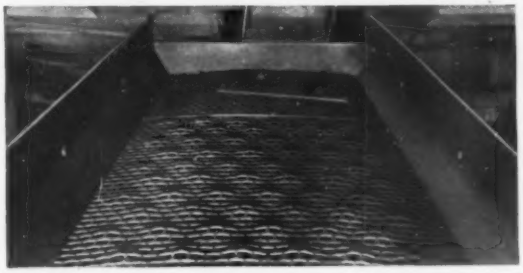

Why put up with clogging? You can eliminate it by equipping your vibrating and shaking screens with Hendrick Perforated Plate. The full clearance prevents clogging—and gives finer, lower-cost screening.

Hendrick Perforated Plate for vibrating and shaking screens is available in practically any size or shape of opening, in high carbon, heat treated steel highly resistant to abrasion.

Write for complete data.

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Uniform Separation

The new model GAYCO Centrifugal air separator makes possible the uniform and increased recovery of cement and other extremely fine materials within a range of 60 to 400 mesh.

- **Greater Capacity**
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- **99% Through 325 Mesh**
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- **Not affected by variation in speed or rate of feed.**

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Economically . . .

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Above is illustrated applied SAUERMAN economy—a small, inexpensive scraper installation that stockpiles crushed silica on the ground alongside washery and reclaims this stored material in required quantities to a drying plant.

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Traffic and Transportation

PROPOSED RATE CHANGES—The following are the latest proposed changes in freight rates up to and including the week of June 21:

Southwestern

24455. **Cement**, natural or portland, points in Colorado and Utah, to points in Arkansas, Oklahoma, etc. To cancel Item 2030 of S. W. L. Tariff 14-T, also to cancel rates applicable to Arkansas and Oklahoma in Item 4300 of W. T. L. Tariff 120-G. Class or combination rates to apply.

24465. **Clay, earth and talc, etc.**, points in Colorado, Wyoming, Utah and other Western states, to points in Arkansas, Oklahoma, etc. To cancel rates applicable to Arkansas, Louisiana (west of the Mississippi River) and Oklahoma in Items 2300 and 3680 of Un. Pac. Tariff 3030-F and rates in Item 4390 of W. T. L. Tariff 120-G applicable to Arkansas, Missouri (shown in Item 200) and Oklahoma. Class or combination rates to apply.

24467. **Clay or sand**, crude or ground, points in Colorado, Utah and Wyoming, to points in Arkansas, Oklahoma, etc. To cancel rates applicable to Arkansas and Oklahoma in Item 2195 of W. T. L. Tariff 120-G and in Item 2310 of Un. Pac. Tariff 3030-F. Class or combination rates to apply.

24469. (2) **Clay, soapstone or talc**, points in Wyoming, to points in Arkansas, Oklahoma, etc. To cancel rates applicable to Arkansas and Oklahoma in Item 1410 of Un. Pac. Tariff 3030F. Class or combination rates to apply.

24479. **Roasted dolomite**, Dolly Siding, Mo., to Duluth and Steelton, Minn. To establish rate of $4.22 per ton of 2,000 lbs., on roasted dolomite, carload min. wt. (see Note 3), from Dolly Siding, Mo., to Duluth and Steelton, Minn.

24480. **Barite rock or barite ore**, crude, Missouri stations to Lake Charles, La. To establish on barite or barite ore, crude, not ground, carloads, min. wt. 90 per cent of marked capacity of car, but not less than 80,000 lbs., from Missouri, origins to Lake Charles, La., the same rates as published to Beaumont and Houston, Tex., in Item 1430-A of S. W. L. Tariff 2-X.

24504. **Sand molding**, Piggott, Ark., to points in Illinois and Iowa. To establish the following rates on molding sand, carloads, min. wt. (see Note 3), from Piggott, Ark., as follows:

To	Rates
Decatur, Ill.	238
East Hannibal, Ill.	275
Galesburg, Ill.	316
Hillsboro, Ill.	252
Jacksonville, Ill.	268
Keithsburg, Ill.	316
Litchfield, Ill.	210
Macomb, Ill.	303
Monmouth, Ill.	316
Quincy, Ill.	*251, †266
Springfield, Ill.	290
Taylorville, Ill.	229
Vandalia, Ill.	238
Wataga, Ill.	324
Burlington, Ia.	316
Fort Madison, Ia.	305
Keokuk, Ia.	288

* Expires June 20, 1941.
† Effective June 21, 1941.

24575. **Sand, molding**, Piggott, Ark., to points in Michigan, Ohio and Indiana. To establish rates on molding sand, carloads, min. wt. (see Note 3), from Piggott, Ark., to destinations in Michigan, Ohio and Indiana on basis of the industrial sand scale in effect prior to Ex Parte 115 plus 35c per ton which sum is then increased 10 per cent under Ex Parte 123. The industrial sand scale is published for application between C. F. A. points, also between C. F. A. and I. F. A. points and is the scale published in Appendix IV of Industrial Sand Cases, 1930, I. C. C. Docket 22907 (204 I. C. C. 159).

24630. **Sand and gravel**, Wilton, Ark., to Shreveport, La. To establish a rate of 92c per ton of 2,000 lb. on sand (except asbestos sand and silica sand) and gravel, carloads, min. wt. as provided in Item 60 of S. W. L. Tariff 162P, from Wilton, Ark., to Shreveport, La.

24663. **Gravel and sand**, Colorado Springs, Denver, Pueblo and Trinidad, Colo., to Amarillo, Tex. To cancel Item 960 of SWL Tariff 14-T. Class or combination rates to apply.

24853. **Stone, crushed or ground, and stone natural**, Colorado Springs. Redstone and Salida, Colo., to Texas. To cancel Items 1530, 1150, and 1560 of S. W. L. Tariff 14-T. Class or combination rates to apply.

24863. **Phosphate rock and limestone, phosphatic**, A. C. L. and S. A. L. origins in the Southeast, to Baton Rouge, La., Helena, Ark., Memphis, Tenn., Natchez, Miss., New Orleans, La., and Vicksburg, Miss. To amend Item 76-C, SWL Tariff 154-D, by adding reference to ACL Phosphate Rock Tariff I. C. C. B-2960, Freight Tariff 97-27 and SWL Phosphate Rock Tariff I. C. C. A-7915 in the list of tariffs now shown in this item in connection with which the bridge arbitraries shown in Item 75 of the tariff apply.

24877. **Fluorspar**, Wagon Wheel Gap, Colo., to Galveston, Tex. To cancel Item 910 of SWL Tariff 14-T, class or combination rates to apply.

24883. **Sand, silica**, points in Colorado and New Mexico, to El Paso, Tex. To cancel Item 1500 of SWL Tariff 14-T Class or combination rates to apply.

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason: No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity.

Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

24895. **Fluorspar**, Colorado points, to Dallas and Ft. Worth, Tex. To establish a rate of $8.80 per ton of 2,000 lb. on fluorspar, carloads, min. wt. marked capacity of car, but not less than 60,000 pounds, from Boulder, Canon City, Denver, Fort Logan, Roberts Spur, Waterton, Echo, Feldspar, Spikebuck, and Texas Creek, Colo., and $9.35 per ton from Buena Vista, Riverside, and Salida, Colo., to Dallas and Ft. Worth, Tex.

24906. **Sand, gravel, crushed stone, etc.**, between points in Missouri. To apply the same min. and description on sand, gravel, crushed stone, etc., as provided for in Item 60, S. W. L. Tariff 162Q, on Missouri State traffic in connection with rates published in W. T. L. Tariff 237C.

24947. **Feldspar**, Canon City, Denver, Echo, Forks Creek, Golden, Roberts Spur, Spike Buck, Texas Creek, Waterton, Boulder, Colo., to Waco, Tex. To establish a rate of $6.45 per ton of 2,000 lb. on feldspar, carload min. wt. 80,000 lb., from Canon City, Denver, Echo, Forks Creek, Golden, Roberts Spur, Spike Buck, Texas Creek, Waterton, Boulder, Colo., to Waco, Tex.

Central

67041 (2) **Cement, Portland, natural, hydraulic or common**, C. L., min. wt. 50,000 lbs. Establish on, from Chicago, Ill., and Buffington, Ind., to E. Fultonham, O., 180c.

67053. **Sand** (except industrial), in open top cars only. Establish on, from Lafayette, Ind., to Ferguson, Ind., 75c per net ton via N. Y. C. & St. L. R. R. through Kokomo, Marion and Bluffton, Ind.

67121. **Dry ground mica**, C. L., min. wt. 60,000 lb. Establish on, from Chicago, Ill., to Detroit, Mich., 20c.

67138. **Crushed slag or crushed commercial slag** (other than granulated), in open-top cars, C. L., min. wt. (See Note 3). Establish on, from Lima, O., to Cleveland, O., 138c; Middletown, O., 116c; Indianapolis, Ind., 138c per net ton.

67144. **Slag** (refuse product of lead and zinc furnaces having no commercial value for further extraction of metal) in bulk, in open top cars, also in closed cars, min. wt. in open top cars (see Note 3) in box cars 60,000 lb. Establish on, from Collinsville, Ill., to Wab. Ind., 171c and Cincinnati, O., 182c per net ton, in open to pcars; to Cincinnati, O., 246c per net ton, in closed cars.

67149. **Slag, crushed**, in open top cars, C. L. Establish on, from Niagara Falls, N. Y., to Clarksburg, W. Va., 278c net ton.

67155. **Sand, all kinds, and gravel**, in open top cars, C. L. Establish on, from Rock Creek, O., to Niles, O., 66c per net ton.

67210. **Limestone** (unburnt), ground or pulverized, C. L., min. wt. 60,000 lb. Establish on, from Nario, O., to destinations in W. Va., as follows: Clay, 259; Porters, 259; Hundred, 226; Clarington, 215; Littleton, 226; Roseby Rock, 215; Paden City, 226; Sandyville, 237; Letart, 226; Point Mills, 215; Elm Grove, 204; Rowlesburg, 259; Ironton, 251; Belington, 259; Bridgeport, 248; Sago, 259; Orlando, 259; Arvendale, 281; Burnsville, 270; Walkersville, 270; Gassaway, 281; Glendon, 281; Ira, 270; Dundon, 259; Toll Gate, 237; Ellenboro, 226; Wallace, 237.

67233 (cancels WDA 65591 and 65592). **Crushed stone**, in bulk, in open top cars only; **crushed stone screenings**, in bulk, in open top cars only, **tailings**, in bulk, in open top cars only, C. L. Establish on, from Narlo, O., to points in W. Va., rates as follows: Grafton, 231; Clarksburg, 220; Gassaway, 253; Villa Nova, 242; Hartland, 242; Elkhurst, 231; Porters, 231; Falling Rock, 231; Walgrove, 220; Empire Mine No. 1 (Peacock Mine), 220; Cairo, 209; Parkersburg, 198; Ravenswood, 209; Reedy, 231; Spencer, 231.

67308. **Limestone**, ground or pulverized, unburnt, in straight or mixed carloads, min. wt. 60,000 lb. Establish on from Bloomington and Greencastle, Ind., to principal consuming points in the East, rates as shown in Exhibit G attached.

67318. **Agricultural limestone**, unburnt, in open top cars; **crushed stone, crushed stone screenings**, in open top cars, C. L.; **agricultural limestone**, unburnt, C. L., min. wt. 50,000 lb. Establish on, from Woodville and Gibsonburg, O., to Crescent, O., 138c on crushed stone in open top cars and agricultural limestone, in open top cars; 165c per N. T. on agricultural limestone.

67320. **Lime**, C. L. Establish on, from Mosher and Ste. Genevieve, Mo., to Jackson, O., min. wt. 30,000 lb. 22c, and min. wt. 50,000 lb. 50c.

67350. **Stone, crushed, and screenings, stone, crushed**, in bulk, in open top cars, and **agricultural limestone**, unburnt, in open top cars, C. L.; also on **limestone, agricultural**, unburnt, C. L., min. wt. 50,000 lb. Establish on, from Woodville and Gibsonburg, O., to stations on B. & O. R. R. in Ohio, rates as shown below.

(Rates in cents per net ton)
From Woodville and Gibsonburg, Ohio

(1)	(2)	(3)	(4)
Hicksville	116	121	...
Warwick	127	127	...
Barberton	127	127	...
Akron	...	127	...
Lowellville	149	154	...
Canal Fulton	127	127	154
Piedmont	...	...	165
Martins Ferry	171	171	...
St. Clairsville	160	160	...
Findlay	94	99	...
Ottawa	105	105	121
Columbus Grove	105	105	...
Cairo	105	105	132
Wapakoneta	110	110	...
Dayton	138	138	165
Hamilton	160	160	...
Cincinnati	160	160	...
College Corner	160	160	176
Arcanum	138	138	...
Columbia Park	171	171	198
Madeira	160	160	176
Chillicothe	149	149	...
Belpre	171	171	...
Swift	...	171	165
Philo	149	149	...
Zanesville	138	138	...
Carbondale	171	171	176
Black Fork	171	171	176
Washington, C. H.	149	149	...
Toboso	...	...	165
Barnesville	...	...	165
Neffs	...	...	198

(1) Representative to stations on B. & O. R. R. in Ohio.
(2) Proposed rates on crushed stone and crushed stone screenings.
(3) Proposed rates on agricultural limestone, open top car.
(4) Proposed rates on agricultural limestone, min. wt. 50,000 lb.

Illinois

39931. **Fluxing lime**, having no commercial value for building or chemical purposes, C. L., min. wt. 60,000 lb., from Woodsboro, Md., and Frederick, Md., to Butler, Pittsburgh, Vandergrift and Verona, Pa., $2.10 and to Struthers and Youngstown, Ohio, $2.86 per net ton. Reason—To reinstate rates formerly in effect.

New England

54558. **Crushed stone**, min. wt., 50 net tons, except when cars of lower capacity are furnished for carrier's convenience; C. L. min. wt. will be marked capacity of car, to Ayer, Mass., from Greenfield, Kendal Green, Lynn and Winchester, Mass. Present—110, 88, 99 and 88 respectively; proposed—85, 55, 70 and 60, respectively. Present—B. & M. I. C. C. A3028. Reason: To enable the B. & M. to receive a haul on this traffic.

OBITUARIES

JOHN E. BAKER, well-known lime and crushed stone producer, died June 9 at the age of 81. In addition to heading the J. E. Baker Co., York, Penn., operating six plants, he was president of the Keystone Coal Co., first vice-president of the First National Bank of York, and a director in the York Water Co. He was born April 14, 1860 near Frederick, Md., and started in the lime business at the age of 29 under the name of the Wrightsville Lime Co., which was later absorbed by the J. E. Baker Co. He is survived by his wife, a daughter, Mrs. S. Walter Stauffer, and a son, William H. Baker.

•

JOHN DOLESE, president of Dolese Brothers Co., Chicago, Ill., died recently at his home in Evanston, Ill. Mr. Dolese headed extensive crushed stone, sand and gravel, and ready mixed concrete business interests centered in Oklahoma City, Okla. Two plants were also operated in Kansas.

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MILLARD L. THOMAS, engineer for the Yakima Cement Products Co., Yakima, Wash., died recently of a heart attack. He at one time was engaged in mining activities in Chile, South America.

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WILLIAM H. MOODY, superintendent of the Rock Island Sand & Gravel Co. for the past 27 years, died recently after an illness of two months.

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HARRY C. STEVENS, superintendent of the Standard Portland Cement Co., died May 27 at the age of 46. Mr. Stevens came with the Standard company in July, 1925, as a foreman during the construction of the plant. Shortly after he was made assistant superintendent, and in 1935 was made superintendent. His early life was spent in cement mills in the Hudson, N. Y., district.

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WARREN G. JONES, president of the W. A. Jones Foundry & Machine Co., Chicago, Ill., passed away recently after a heart attack. He was also vice-president of the Sackett Screen & Chute Co., Chicago.

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CARL E. CROSS, shift foreman of the Signal Mountain Portland Cement Co., Chattanooga, Tenn., died May 15.

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HARRY D. CLOUD, president of the White Seal Vault Co., Lexington, Ky., died at his home after a short illness. Mr. Cloud was one of the organizers of the Lexington Granite Co., sold his interests in 1925.

HENRY CARPENTER, vice-president of the Pine Creek Lime & Stone Co., died recently.

Manufacturers' News Notes

Cooper-Bessemer Corp., Mount Vernon, Ohio, has announced the election of D. B. Williams as president of the company, succeeding the late Chas. B. Jahnke.

Hercules Powder Co., Wilmington, Del., announced the election of Petrus W. Meyeringh as vice-president and member of the company's Executive Committee. Albert E. Forster, general manager of Naval Stores Department and Luke H. Sperry, chief engineer of the company, were elected directors of the company.

Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., recently dedicated a memorial to Col. A. F. Townsend, co-Founder on May 10th, 1941. Employes all contributed to a 55-ft. bronze flagstaff surmounting a granite pedestal, ornamented by a bronze bas-relief of Col. Townsend.

Chain Belt Co., Milwaukee, Wis., announces the appointment of D. A. Kalton and A. W. Thomas as assistants to the sales manager of the Construction Equipment Division.

Smith Engineering Works, Milwaukee, Wis., announces the appointment of Harry Buckenheu as New York district manager. Mr. Buckenheu will be located at room 1604, 50 E. 42nd St., New York City and his territory will include northern New Jersey, all of New York State and southern Connecticut. For a good many years, he has been associated with the sand and gravel and crushed stone industry.

E. I. du Pont De Nemours & Company, Inc., Wilmington, Del., has announced the immediate construction of a new neoprene synthetic rubber plant at Louisville, Kentucky, to be built, financed and operated by the company. Neoprene, the only non-metallic substance on the Government's mandatory priority list, was developed in du Pont research laboratories and has been in commercial production for ten years.

The Marion Steam Shovel Co., Marion, Ohio, announces the appointment of Walling Tractor & Equipment Corporation, Portland, Oregon, as its distributor for the entire state of Oregon and part of southwestern Washington.

Link-Belt Co., Chicago, Ill., advises that Mr. Laurence M. Ewell has been appointed general manager of eastern division operations, with headquarters in Philadelphia. Mr. Ewell, who has until now been export manager, and manager of the company's New York office, will be succeeded in that position by his very able assistant, Carl A. Woerwag, with headquarters in New York as heretofore.

Whiting Corporation, Harvey, Ill., announces the return to its Pulverizer Department of Aubrey J. Grindle, well-known pulverizer engineer.

The Ransome Concrete Machinery Co., Dunellen, New Jersey, has appointed The State Tractor & Equipment Company, Phoenix, Arizona and The Northwestern Road Supply Company, Watertown, S. Dak., to handle their complete line of construction equipment in their respective territories.

Chicago Pneumatic Tool Co. announces the appointment of Myron Powers as manager of purchases with headquarters at the general offices, New York, N. Y., effective June 1st. Mr. Powers was formerly in charge of purchases at the Cleveland plant.

New Incorporations

Howat Concrete Co., Inc., with principal office in Richmond, Va., has been incorporated with a maximum capital of 100 shares, no par value, to manufacture and deal in cement and other building materials.

Davis Sand & Gravel Corp., a Maryland corporation, with principal office in Richmond, Va., has a maximum capital, 100 shares without par value and $100,000 preferred. Central National Bank is agent in charge of business.

Long Creek Lime Kiln Co., Macon County near Lafayette, Tenn., has completed incorporation requirements and a charter has been obtained. The new concern is capitalized at $20,000. L. D. Hanes is president and Charles F. West is secretary.

Waco-Tex Sand & Gravel Co., Waco, Texas, is the name of a new company with capital stock of $20,000. Incorporators are J. R. Vatton, F. L. C. Greer, H. B. Lackey.

Provo Lime Co., Salt Lake City, Utah, has been organized to engage in quarrying and processing of limestone, etc. Authorized capital is $50,000. C. R. Jones is president; Evan W. Hansen, vice-president; Orrin V. Hansen, secretary; K. J. Hill, treasurer.

Catawba Limestone Corp., Newton, N. C., has been incorporated to mine and prepare for market all kinds of minerals. Authorized capital stock is $50,000, subscribed stock $10,000, by D. N. Jones, Mrs. D. N. Jones, S. P. Marsh and Mrs. S. P. Marsh.

Smith Stone Corp., Wilmington, Del., building supplies, has been granted a charter with a capital of $50,000. Incorporators are L. H. Herman, W. T. Cunningham and Everett Mayo.

Ocean-going Barges Hauling Rock

COLUMBIA CONSTRUCTION CO. is building ten 1100-ton barges at Long Beach, Calif., which will haul rock from Catalina Island to the new Long Beach outer harbor breakwater job. First material to be hauled will be 1,310,000 cu. yd. of mound sand and 1,257,000 cu. yd. of clay which will serve as a base for the 2½-mile breakwater extension which is being rushed as a defense project. Later, contractors will dump 1,488,000 cu. yd. of B-rock to be followed by the heavier A-rock.

Stone Company Rebuilds Road for County

FRANCE STONE CO. has rebuilt a mile of the Mt. Pleasant-Flat Rock road, south from U.S. Route 20, west of Bellevue, Ohio. The road was widened and given a heavier base and top at the expense of the stone company which uses the section extensively to haul stone from its quarry to the plant.

Open Slate Quarry

STEWART & NESS CO., Fresno, Calif., will operate the McCarty slate quarry near Copperopolis, Calif. An agreement has been signed with the Jackson T. McCarty Co. to operate the plant, and pay $50,000 on a royalty basis. The quarry covers 32 acres, and the plant has a production of 20 tons daily. Operations will be electrified. It is said to be the only slate shingle plant west of the Mississippi river.

Open Block Plant

J. C. KENNEDY, Lawton, Okla., real estate man, has opened a concrete products plant. It is planned to manufacture concrete pipe as well as block.

Sell Lime Plant

KELLER LIME CO., INC., located in the Buckeyetown district near Frederick, Md., has been sold at a public sale to George W. Young for $6,955. The sale did not include the stone crushing equipment.

Shut WPA Quarry No Labor

AFTER operating continuously for 18 months, the WPA project at the county quarry near Frederika, Iowa, was closed down as there was insufficient "relief" labor to operate it. Most of the men on the project have been shifting off into private jobs.

Classified Advertisements

Classified Advertisements

POSITIONS WANTED — POSITIONS VACANT Set in six-point type. Minimum $1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, $5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

READY—No Waiting for Delivery with CONSOLIDATED Used Machinery

OLIVER FILTERS

3—Oliver Rotary Continuous Filters, 8 x10', wood stave, closed steel head, steel trough, oscillating agitator, reduction gear drive, no motor, complete with receivers, pumps.

GYRATORY CRUSHERS

1—36" Style "N" Allis-Chalmers, short shaft.
1—16" Telsmith No. 7.
1—30" Superior McCully.
1—20" Superior McCully.

GYRATORY REDUCTION CRUSHERS

1—1'8" Traylor TY.
1—410-TZ, capacity 150 t.p.h. through 1¼" square mesh; 10" feed opening.
1—Kennedy No. 25 with motor in pulley.
1—Kennedy No. 49 with motor in pulley.
1—Kennedy No. 19, V-belt drive.

JAW CRUSHERS

30x42" Buchanan Type 'C"; 48x42" Traylor Bull-dog; 66x86 Traylor; 36x24 Farrel; 18x36 Farrel; 24x36 Allis-Chalmers; 8x36 Universal Roll Jaw; 18x30 Allis-Chalmers and smaller sizes.

ROTARY DRYERS, DIRECT HEAT

Ruggles-Coles, double shell: 5'x26', 5'x30', 5'6"x60', 80"x45'.
Single Shell: 4'x30', 5'x30', 6x40, 6x50, 6x60, 8x60, 8'8"x85.

ROTARY KILNS

6'60', 8'x110'.

CRANES

1—55B Bucyrus Erie Crane, Atlas Imperial Diesel Engine, Dragline Fairleads; 110 ft. boom; lifts 62,000 lbs. at 20 ft.
1—Lorain "95" Dragline, 2 yd., 100 ft. boom, "Caterpillar" Diesel.

2—6'x12' ROD MILLS

Hardinge straight side Rod Mills, iron lined, herringbone steel gears, enclosed gear drive units, charge of rods with each mill. Arranged for peripheral or trunnion discharge. In excellent condition and for immediate shipment.

1—Bucyrus Erie Steam Driven 50-B Crane, equipped with Pile Driver Fairleads; double drums, 75' boom. Lifts 68,000 lbs. at 15 ft.
1—Marion No. 381 Crane, equipped with Waukesha-Hesselman Oil Engine: 75' boom.
1—Class 17 Clyde Whirley. Lifts 30 tons at 30 ft.

AIR COMPRESSOR

1—Ingersoll-Rand No. 315-A, driven by Hesselman Oil Engine.

HAMMER MILLS

32"x15" Penna. SX-2, 4x1" hammers, adj. grate.
36"x24" Gruendler No. 4XA, 60—3"x1" hammers.
24" Mikro Pulverizer No. 4-TH, stirrup hammers.
No. 5 Williams Roller Knife Shredder, 40"x30".
No. 4 and No. 6 Williams "Jumbo".
20" dia. x 24" Dixie, direct conn. 40 H.P. A.C. motor.
21"x20" Jeffrey Type B-2 Shredder.
50"x24" Stedman, Model "A".
No. 3 and No. 5 Jay Bee Mills.

DIESEL GENERATING SETS

1—560 H.P. F-M, Model 33, Style M, 257 RPM, 4-cyl., 16"x20", with magnetic clutch and pulley take-off. Used two years.

2—1200 H.P. McIntosh & Seymour, Type 8-B-40, 8-cyl., 29"x24", 250 RPM. For sale with or without direct connected 800 KW Westinghouse d.c. generator. We have just sold two of these sets.

VIBRATING SCREENS

3—4'x7' Leahy, 2 deck, motor driven.
8—3'x5' Tyler Hummer, 2 deck, No. 31, enclosed.
1—3'6" x 8' Link-Belt, Type NP-148, 1 deck.
2—4'x7' Jeffrey-Traylor, Type FB-4, 2 deck.
1—No. 52 Rotex, 5'x10', 2 deck.
2—3'x7' Simplicity, 2 deck, motor driven.
2—3'x8', 3'x10' Niagara, 3 deck.
1—4'x8' Huron, 1 deck, V-belt drive.

LIME HYDRATOR

Weber type, made by Arnold & Weigel with No. 1 Raymond Bros. Lime Separator; also Kritzer. One complete Hydrated Lime Plant.

CENTRIFUGAL AIR SEPARATORS

10' Sturtevant; 8', 10' 12' Gayco; 6' Raymond; also 5' dia. Raymond "Whizzer" for attachment to roller mill. 5' Gayco.

BALL, ROD AND TUBE MILLS

Ball Mills: 3'x5', 5x10, 6x6, 6x8.
Rod Mills: 4'x8', 6x12 Hardinge, straight side.
Tube Mills: 2—5'x20' Bonnot Co., silex lined.
1—5'x22' Bonnot Co., silex lined.
6'x23', 2—6'6x20' Smidth, silex lined.
5'x22' Allis-Chalmers, 5'x35' Vulcan, both iron lined.

RAYMOND PULVERIZERS

2—4 roll High Side, located Toledo.
Nos. 0000, 00, 1 and 3, Beater type—also Nos. 55, 60, 90 Imp type, also No. 40 Imp with 6' Centrifugal Separator.

CONSOLIDATED PRODUCTS CO., INC.
15-16-17 PARK ROW *Our Shops at Newark, N. J., cover eight acres.* **NEW YORK, N. Y.**

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.
Fort Wayne, Indiana

FOR SALE

1—ALLIS CHALMERS BUTT STRAP ROTARY DRYER
⅝" PLATE 7'0" DIA., 121' LONG
EXCELLENT CONDITION

MANLEY SAND CO.
ROCKTON, ILLINOIS

¾, 1, 1¼ yd. Owen & Williams Buckets
30, 35 HP Gas Hoists
50, 60, 100 HP Elec. Hoists
1¼ Nwest Shovel Attachment
1¼ B-Erie 41B Shovel attachment
1 yd. Page Dragline Bucket
½, ¾, 1¼ Gas Crawler Cranes

J. T. WALSH
Brisbane Bldg. Buffalo, N. Y.

Welding Outfits $29.75 to $76.06
Cutting Outfits $49.47
Welding Torches $11.78 up
Cutting Torches $17.93 up

Superior Oxy-Actylene Co.
Dept. W
Hamilton Ohio

No. 80 Austin Western Portable Crushing & Screening Plant
36x60" Fairmount Single Roll Crusher
Austin No. 5 over 2' Symons Cone Crusher
24x72" Traylor, 36x24" Farrell Jaw Crushers
No. 13 McCully, No. 19, 25-S & 37 Kennedy
Barber Greene Loaders 24, 25, 42 & 82.
Two—6x12' Ball Mills, silex lined. Good.
Shovels, Cranes, Screens, Conveyors, Elevators.
WHAT DO YOU NEED? ASK FOR BULLETINS 54 & 55.

MID-CONTINENT EQUIPMENT CO.
710 Eastgate Pa. 2290 St. Louis, Mo.

FOR SALE

Clamshell Buckets—Blaw Knox—½, ¾, ⅞ and 1 yd.
Dragline buckets—Page 1¼ and 2 yds.
Shovel dipper—1 yd. full manganese.
Locomotive Crane—Browning No. 5, 25-ton, steam, eight wheel, 50 ft. boom.
Marion Mod. 36, combination, 1½ yd., shovel crane and dragline.

P. A. HENAULT
2140 Book Bldg. Detroit, Mich.

CRUSHERS

GYRATORY: 42" Gates K. 20" Superior McCully (Like new). 20" Superior McCully. Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x84, 48x60, 42x48, 24x72. Superior 84x66 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1020. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 9x30, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" TZ, 8", 10", 12". Super. McCully 6" & 10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.
ROLLS: Allis-C. 12½x12, 36x16, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 6 & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40, Etc.
MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x3', 8'x30' & 6'x9'. Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller-Lehigh, Etc., Etc.
CRUSHING PLANTS: No. 65 Diamond. No. 22 Pioneer 8x24. 1030 Good Roads, 9x40 Austin-Western, 9x36 C.R.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Draglines, Drag Scrapers, Dredges, Drills, Engines, Elevators, Excavators, Generators, Hoists, Kilns, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Shacklines, Shovels, Tanks, Trucks, Tractors, Eetc, in many sizes, types and makes at low prices. **(I have equipment at many points in the United States and Canada. What you need may be near your plant.)**

ALEXANDER T. McLEOD
7229 Rogers Avenue CHICAGO

AN OPPORTUNITY TO BUY—

THOMAS HOISTS

FROM OUR RENTAL STOCK

20-35 HP Electric or Gasoline single or double drum.
50-60 HP Electric or Gasoline single, double or 3-drum hoists.
90-100 HP Electric or Gasoline single, double or 3-drum hoists.

Can Be Furnished With Attached Boom Swingers.

These hoists are of our latest type—
They are in first class condition.

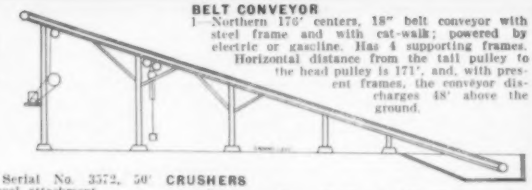
HOISTS SUPPLIED ON A RENTAL BASIS

THOMAS HOIST COMPANY

28 So. Hoyne Ave. Chicago, Ill.

ANOTHER E.C.A. BARGAIN

REBUILT QUARRY EQUIPMENT FOR RENT OR SALE



BELT CONVEYOR
1—Northern 175' centers, 18" belt conveyor with steel frame and with cat-walk; powered by electric or gasoline. Has 4 supporting frames. Horizontal distance from the tail pulley to the head pulley is 171', and, with present frames, the conveyor discharges 48' above the ground.

AIR COMPRESSORS
Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

BINS
12—1 150-ton Blaw Knox 2 comp., 1 120-ton Blaw Knox, 1 comp., and the following 2 comp. bins, 2 118-ton Blaw Knox, 1 117-ton Blaw Knox, 1 72-ton Blaw Knox, 1 75-ton Butler, 1 51-ton Blaw Knox, 1 40-ton Johnson, 1 35-ton Blaw Knox, 2 30-ton Johnson. Above with or without weigh batchers.

BUCKETS
26—Clamshell, all sizes and types: Williams, Blaw Knox, and Owen.
6—Dragline: 1—1¾ yd. Northwest; 1—1½-yd. Omaha; 1—1¼ yd. Page; 2—1 yd. Hayward; 1—¾ yd. Page.
1—1½ yd. Pioneer Cableway Excavator bucket.
7—Dragscraper: 2—1 yd. Sauerman; 1—1 yd. Green; 1—¾ yd. Garst; 2—½ yd. Garst.

CRANES, DRAGLINES AND SHOVELS
1—Link-Belt, K-55, ser. No. 1698, 70' boom, 2 yd. bucket, also have a 2 yd. shovel attachment.
1—Link-Belt, K-48, ser. No. 1728, 60' boom, 2 yd. bucket.
1—Northwest Model No. 5, Serial No. 3572, 50' boom with 1¼ yd. pull shovel attachment.
1—Link-Belt model K-42, ser. No. 1265, 45' boom, 1¼ yd. bucket, also 1 yd. trench hoe att. or 1¼ yd. shovel front.
1—Northwest model 104, ser. No. 2079, 45' boom, 1¼ yd. bucket; with 1 yd. shovel attachment.
3—Northwest Model No. 4's, Ser. Nos. 3441, 3445, 3493, with 40' boom and 1 yd. pull shovel attachments.
2—Northwest model 105, ser. No. 1645, 1522, 40' boom, 1 yd. bucket.
2—Osgood Heavy Duty, ser. No. 2069 and 2087, 40' boom 1 yd. bucket and with 1 yd. shovel attachment.
1—Thew ¾ yd. Gasoline Shovel with ¾ yd. shovel front and 40 ft. crane boom. Serial No. 2801.
2—Koehring Model 301, Ser. 544 and 772, 40' boom, ¾ yd. bucket.
1—Byers Bearcat Model No. 128, ½ yd. cap., ser. No. 4119 with 30' boom.
1—Byers Bearcat model 27, ser. No. 5289, 30' boom, ½ cl. sw. ½ yd. bucket.

CRUSHERS
5—Gyratory crushers: 1—No. 5 Allis-Chalmers; 1—No. 5 Austin; 1—No. 5 Gates; 1—No. 3 McCully; 1—No. 0 McCully.
10—Jaw Crushers: 3—15x36" Universal; 1—15x36" Cedar Rapids; 1—15x26" Champion; 1—12x20" Acme; 2—10x20" Climax No. 2¼; 1—9x16" Telsmith No. 9A; 1—9x15" Champion.
1—Set of Allis-Chalmers, smooth type crushing rolls, 42x16".

DREDGE PUMPS
1—12" Morris Heavy Duty D. C. to 100 H.P. dbl. cyl. steam engine.
3—Belt Driven: 3—Morris Mang., 1—10", 1—8", 1—6".

HOISTS
1—National 50 HP dragscraper hoist for handling 1 yd. bucket with 50 HP electric or gas power.
1—1 Yd. Cedar Rapids 2 speed dragscraper hoist with 50 HP electric or gas power.
1—1 Yd. Kera variable speed dragscraper hoist powered by 50 HP electric motor.

Send for our new 64 page stock list

EQUIPMENT CORPORATION OF AMERICA

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CHICAGO—1119 So. Washtenaw Ave. Phone Nevada 2400
PITTSBURGH—P. O. Box 933. Phone Federal 2000

LOCOMOTIVES SHOVELS — CRANES CARS

1—50 ton American Saddle Tank A.S.M.E. Boiler
1—40 ton Porter Saddle Tank, new firebox in 1940
1—32 ton Porter Saddle Tank, rebuilt

15—Modern Covered Hopper Cement Cars

1—17½ ton Brownhoist Steam Loco. Crane, New A.S.M.E. Boiler
1—15 Ton Industrial Steam Loco. Crane, New Tubes, Nat'l Board Boiler

1—1½ Yd. Rehandling Clamshell Bucket, Like New

Birmingham Rail & Locomotive Co.
BIRMINGHAM, ALA.

CLOSE OUT LATE STYLE
CRUSHING EQUIPMENT
at bargain prices

REDUCTION CRUSHERS
1—7" Style B Newhouse Allis Chalmers Manganese fitted with 60 H.P. Elec. Motor.
1—10" Style B Newhouse Allis Chalmers Manganese Fitted with 100 H.P. Elec. Motor.

ALSO
ALLIS-CHALMERS SUPERIOR McCULLY TYPE GYRATORIES
1—10" and 1—20", both manganese fitted.

THIS EQUIPMENT NEARLY NEW—HAS RUN LESS THAN 1000 YDS.

ALSO
1—2-YD. COMBINATION SHOVEL AND DRAGLINE MODEL 78 NORTHWEST

WRITE - WIRE - PHONE

Machinery & Supplies Co.
1732 Grand Ave. Kansas City, Mo.

FOR SALE

KILNS: 8' x 80', 9' x 142', 9' x 160'.
DRYERS: 5' x 36', 4' x 40', 5½' x 32', 6' x 60', 6' x 40'.
CRUSHING ROLLS: 6" x 5", 24" x 14", 42" x 16".
JAW CRUSHERS: 16" x 24", 10" x 36", 10" x 42".
BALL MILLS: 5' x 8', 6' x 6', 5' x 22', 6' x 22', 8' x 30".
RAYMOND MILLS: No. 0000, 00, 1, also 3, 4 and 5 Roller Mills.
HAMMER MILLS: Williams, Gruendler, Jeffrey, etc.
SCREENS: Tyler-Hummer, Sturtevant.

We Purchase Single Items to Complete Plants.

BRILL Equipment Corporation
183 Varick Street
New York City

FOR SALE

13-Kilbourne & Jacobs 16 cu. Yard air operated Dump Cars, fully rebuilt and available for immediate inspection and delivery, quotations and prints gladly furnished.

RAILWAY ACCESSORIES COMPANY, 4100 Carew Tower, Cincinnati, Ohio

---

RAILS—1 Ton or 1000

NEW RAILS—5000 tons—All Sections—All Sizes.
RELAYING RAILS—25,000 tons—All Sections—All Sizes, practically as good as New.
ACCESSORIES—Now—Every Track Accessory carried in stock—Angle and Splice Bars, Bolts, Nuts, Frogs, Switches, Tie Plates.
Buy from One Source—Save Time and Money.
"Phone, Write or Wire

L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

FOR SALE

1—Vulcan Iron Works 7'0" x 55'0" Rotary Dryer in good condition.

Ebsary Gypsum Company, Inc.
Caledonia, N. Y.

New—RAILS—Relaying
ALL SECTIONS

Also contractors' equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locos, frogs and switches. Attractive prices quoted. Wire, write or telephone for quotations.

M. K. FRANK
100 Lexington Ave. New York, N. Y.
25 St. Nicholas Building Pittsburgh, Pennsylvania

NEW AND USED EQUIPMENT FOR SALE

Immediate Delivery

All used items have been reconditioned and are guaranteed.

Condition

1—9" x 16" bronze bearing DIAMOND Jaw crusher complete with flywheels and Model P2877D2 LeRoi motor mounted on trailer unit with steel wheels. (Power: 16-26 HP. 4 Cylinder @ 900-1500 RPM).....New
2—Pitman assemblies with SKF bearings including main bearings for 10" x 20" jaw crusher.....New
1—Bucket elevator 32'0" centers, rigid type, with buckets 12" x 6" x 7⅝" mounted on belt.....New
*2—Pitman assemblies for 10 x 20 jaw crusher, bearings SKF type....Slightly Used
*2—10 x 36 Pitman assemblies for 10 x 36 jaw crusher.....Rebuilt
*1—15 x 36 Pitman assembly complete...Rebuilt
1—20'0" bucket elevator with buckets 10" x 6" x 7⅝" mounted on chain.....Rebuilt
1—30" x 10'0" double shaker screen.Slightly Used
1—Grizzly and hopper 6'8 x 6'8 with 5" sq. opgs. and 20" x 3'0" plate feeder .....Good Condition
1—Quarry plant with 10 & 20 anti-friction brg. jaw crushers and folding type bucket elevators size 12 x 6 x 7⅝" x 25'0" mounted on trucks with four steel wheels.....New
2—30 cubic yard bins, 3 compartment with jack legs.....New
6—Steel wheels 40" dia. x 16" face to take 4" Hyatt bearings.....New
4—Steel wheels 40" dia. x 10" face to take 4" Hyatt bearings.....New
4—Steel wheels 28" dia. x 4" face bore 1⅞" .....New
6—Steel wheels 28" dia. x 5" face, bore 1-15/16" .....New
8—Steel wheels 24" dia. x 3½" face, bore 1⅞" .....New
4—Steel wheels 28" dia. x 14" face, bore 4" Hyatt .....New

POWER UNITS

1—U-40 Allis-Chalmers Power Unit @ 36 Cont. HP @ 1200 RPM.....Rebuilt
1—W-25 Allis-Chalmers Power Unit @ 25 HP. @ 1300 RPM.....Rebuilt

*The above pitman assemblies can be installed in new bases and furnished as complete machines.

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48 x 60" Traylor Jaw & 200 HP 440 V. Motor.
No. 3 Northwest ¾ yd. Shovel-Crane-Dragline.
No. 600 P & H 1 yard gasoline crawler crane.
20 ton Whitcomb Gas Loco. 36" and 4'8½" Ga.
25 ton Link Belt Steam Locomotive Crane.
120-200-440 HP Diesel Engines, also generators.

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CRANES

1—Gantry Crane 10 ton capacity 60' span 4 motor, bucket operating, 440 volt AC with or without clamshell bucket.

COMPRESSORS

1—Gardner Denver Type ABJ capacity 672' actual air, 2 stage, multi cylinder with combination radiator for cooling jacket water and inter-cooling compressed air, V belt drive, 150 H.P. motor all on structural steel base, used six months.
1—Ingersoll Rand Model 75 CH, 2 stage, air cooled, capacity 360' actual air with 75 H.P. motor, direct coupled all on structural steel base, used 11 months.
1—Sullivan Tandem compound air compressor 1000 cu. ft. steam.

CONVEYORS

2—24" belt conveyors, 225' centers, mechanical parts only.

JAW CRUSHERS

10 x 15 to 56 x 84.

GYRATORY, PRIMARY AND REDUCTION CRUSHERS

ALL MAKES AND SIZES.

CRUSHER SPECIALS

1—13 x 30 Buchanan Jaw Crusher.
1—Telsmith 15 x 24 Jaw Crusher.
1—Farrell 24 x 36.
1—Traylor Type TY size 1'8".
1—Superior McCully 30".
1—Kennedy Model 25 gearless.
1—Kennedy Model 19 gearless.
1—Traylor 2' finishing crusher.
1—Set Allis Chalmers 16" x 36" crushing rolls.
1—Set Allis Chalmers 14" x 24" crushing rolls.

DERRICK

1—30 ton capacity guy derrick, 100' mast, 85' boom.

LOCOMOTIVE CRANES, STEAM

1—22 ton, 55' boom double drums.
1—15 ton, 50' boom double drums.
1—25 ton, 50' boom double drums.
1—30 ton, 60' boom double drums.
All of the above are thoroughly modern with National Board boilers.

DIESEL OIL ENGINE

1—450 H.P. 4 cylinder, 4 cycle, solid injection, 225 RPM with or without 300 KW AC 2200 volt generator.

HOISTS

1—Sullivan electric dragscraper or sluicing hoist, double drums, 60 H.P. 440-2200 volt AC motor.
1—Sauerman steam slackline or cableway hoist, cylinders 16 x 12.
1—Sauerman double drum dragscraper hoist, electric, 75 H.P. AC 440 volt.
1—60" dia. x 36" face.
1—72" dia. x 36" face single drum mine type hoist, 150 H.P.
1—78" dia. 72" face, 300 H.P.
1—58" dia. single drum hoist, 100 H.P. motor
All of the above are AC 2200-440 volt AC motors.

MOTOR GENERATOR SET

1—100 H.P. 440 volt AC to 65 KW 230 volt DC.

KILNS

2—6' and 7' x 100'.

DRYERS

1—6' x 60' single shell.
1—6' x 30'.
1—54" x 40'.

LOCOMOTIVES, STANDARD GAUGE

2—55 ton Vulcan, steam, built 1933, power reverse, air operated fire doors, National Board Boilers, used 11 months for sale or rent.
6—Plymouth and Whitcomb 7, 8, 12 tons gas locomotives.
1—Vulcan 66 ton 0-6-0 saddle tank, cylinders 18 x 24, National Board boiler.

LOCOMOTIVES, NARROW GAUGE

6—Vulcan and Porter locomotives, 15 to 25 tons, steam, 36" gauge.
6—Plymouth and Whitcomb 5, 7, 12 and 16 tons capacity, 24" and 36" gauge, gas.
6—4 ton Storage battery locomotives, 36" gauge.
Vulcan, Porter and Heisler 15 to 40 tons, 36" gauge, steam.

PULVERIZERS

2—42" Fuller Mills.
1—Sturtevant No. 1 and 1—No. 1½ Ring Roll Mills.
1—Allis Chalmers 3½ x 12 tube mill.

DREDGE PUMP

1—Morris 10" dredge pump, manganese fitted, belt drive.

VIBRATOR SCREENS

2—4 x 10 double deck heavy duty.
1—New Holland, 2 x 6 single deck.
1—Nordberg 2 x 8 single deck.
1—3 x 8 double deck with motors.

TANKS

6—10,000 gal. capacity cylindrical horizontal oil storage tanks.

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AIR COMPRESSORS

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DIESEL: 603, 807 & 1066 Ft.
PORTABLE GAS: 110,160,220,310,540 & 1200 Ft.
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Owen R. A. & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
1¼ Yd., 1 Yd. & ¾ Yd. HAYWARD Class E.
18 Steel Skips 6½ x 6 x 2½.
5 Ton Bucyrus Rock Grabs.

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⅝ Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA, 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Loco.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.

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2 Yd. Marion Steam Shovel.
⅝ Yd., 1¼ Yd.,2 Yd. & 4 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas.
1½ Yd. LIMA Diesel.
1½ Yd. BUCYRUS 41B Steamer.
1 Yd. Bucyrus 120B Electric. Also 3 yd. Erie Elec.

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46—KOPPEL 1¼ Yd. 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
15—Std. Ga. 50 Ton Battleship Gondolas.

FLAT CARS

9—50 ton std ga. heavy duty flat cars.

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Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6¼x8, 7x10, 8¼x10, 10x12, 12x14.

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75, 90, 180, 200 HP F. M. Engines.
110 HP Ingersoll Rand Engine.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.

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6x8 Pebble Mill & 5x5 Batch Mill.
5'x22" HARDINGE CON. Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x8, 8x6 & 10x9 Straight Ball Mills.
4x16, 5x18 & 5x22 Tube Mills & 6'x22'.
3½ x 8 & 5x7 Air Swept Tube Mills.
2x4½, 6x12 & 5x12 ROD MILLS.

PULVERIZERS

JEFFERY 24x20 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto. Pulverizer No. 0000, 0 & 3.
RAYMOND Imp Mills No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 ft.Chaser M.

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10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

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116 Ton Blaw Knox 2 Compt.

400 BARREL CEMENT BIN

400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.

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8, 10 and 14 ft. Separators, Gayco & Bradley.

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36x60 Fairmount & 36x20 Diamond.

JAW CRUSHERS

10x8, 13x7½, 14x7, 15x9, 15x10, 16x9,16x12,16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 26x12,30x15,30x13, 36x15, 36x30, 36x18, 36x14, 36x9,36x6,36x10,36x24, 42x9, 48x42, 48x36, 60x42, 84x66, 36x16, 9x36.

CONE & GYRATORY CRUSHERS

42 in. McCully Mammoth Gyratory.
8 No. 19, 25, 37 & 49 Kennedy.
18 in.,24 in.,30 in.,36 in. and 48 in. Symons Disc.
4—10 TZ Traylor 4 ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory, also 16 inch.
8 in. Traylor T. Gyratory.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 inch Superior McCullys.

SYNCHRONOUS MOTOR GENERATORS

100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 v.
200 K.W.RIDGWAY 3/60/2200-250-275v.,900 rpm.

SLIP RING MOTORS

52 H. P. GEN. ELEC. 3/60/440 v., 1200 rpm.
(3) 100 H.P.GEN.ELEC.3/60/440v.,900-1200 rpm.

CONVEYOR PARTS

BELT: 1000 Ft.60 In.,700 Ft.40 In., 600 Ft.36 In., 800 Ft.30 In., 1642 Ft.24 In.,517 Ft.20 In., 297 Ft.18 In., 500 Ft.16 In.,300 Ft.14 In.
IDLERS: 54 In.42 In.,36 In.,30 In.,24 In.,20 In.,18 In.,16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft.24 In.,30 In.&36 In. Sections.

ROTARY DRYERS AND KILNS

36 In.x20 Ft., 3 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In. x 30 Ft.,42 In.x24 Ft.,5 Ft.x30 Ft.,5 Ft.x16 Ft.,5 Ft.x60 Ft.,6 Ft.x60 Ft.,8 Ft.x20 Ft., 6 Ft.x70 Ft.,10x20,7½x100 & 8x110 Ft.Kilns.

STEEL DERRICKS

GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom.25 Ton 100 Ft.Boom.75 Ton 135 Ft.Boom.

LOCOMOTIVES

GASOLINE: 2 Ton,5 Ton,8 Ton,12,14,and 30 Ton.
STEAM: 9 Ton,20 Ton,40 Ton,60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.

SCREENS

VIBRATING: 2x4, 3x6, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 & 4x12, 1, 2 & 3 Deck.
HUMMER, ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x12, 3x15, 3½x18, 3x24, 4x16,4x20, 4x22, 4x24, 5x30, 5x20, 6x20.

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500 Ft.	48"	8	1/8"	1/16"	Conveyor
505 "	36"	6	1/8"	1/16"	"
856 "	30"	6	1/8"	1/16"	"
520 "	30"	5	1/8"	1/16"	"
180 "	24"	6	1/16"	1/16"	Elevator
2305 "	24"	5	1/8"	1/32"	Conveyor
1298 "	24"	4	1/8"	1/32"	"
250 "	22"	8	1/16"	1/16"	Elevator
1874 "	20"	5	1/8"	1/32"	Conveyor
520 "	20"	4	1/8"	1/32"	"
506 "	18"	6	1/16"	1/16"	Elevator
1765 "	18"	4	1/8"	1/32"	Conveyor
285 "	16"	6	1/16"	1/16"	Elevator
1450 "	16"	4	1/8"	1/32"	Conveyor
516 "	14"	6	1/16"	1/16"	Elevator
509 "	14"	4	1/16"	1/32"	Conveyor
420 "	12"	6	1/16"	1/16"	Elevator
385 "	12"	4	1/16"	1/32"	Conveyor

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Complete ready-mix plant, 120 yds., 3 compt. aggregate bin, weigh batcher, separate cement hopper for bag cement. New 1940.
Butler 100 yd. 3 compt. bin, weigh batcher.
50 ton 2 compt. steel bin, weigh batchers.
2—115 tons Johnson bins, 2 compt.
Steel bin, 75 yds., single compt., sand and gravel.
Beaumont 42 yd. two compt. bin.
200 ton rock storage bin, steel, heavy construction.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Smith 1 yd. tilting mixer, electric.
Koehring 27-E paver with boom and bucket.

BUCKETS—STONE SKIPS

22—Steel stone skips, 2 to 3 yds.
1½ yd. heavy duty Blaw Knox digging bucket.
1¼ yd. heavy duty Blaw Knox, digging, clamshell.
1½ yd. Hayward rehandling clamshell.
1 yd. Hayward clamshell, rehandling.
¾ yd. Hains rehandling, clamshell.
1 yd. Hayward orange peel, 4 leaf.
⅝ yd. Hayward orange peel, 3 leaf.

SHOVELS—CRANES

2—Marion Diesel shovels, 1—⅝ yd. cap.
P & H Model 600 1 yd. gas crane.
No. 50-B Bucyrus Erie electric shovel, 2 yds.
Northwest Model 105 ¾ yd gas crane.
Northwest 1¼ yd. gas crane, 60' boom.
Browning 13½ ton comb. truck crane-shovel, ¾ yd.
Northwest 1 yd. comb. shovel-crane, gas.
Universal 7½ ton truck crane, pneumatics.

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RD-8 Caterpillar, with bulldozer.
RD-7 Caterpillar, with bulldozer.
RD-4 Caterpillar with bulldozer.
D-5 Caterpillar with bulldozer.

LOCOMOTIVES—CARS

2—Vulcan 6 ton, gas, 36" gauge.
2—Whitcomb 4½ ton, gas, standard gauge.
8—3 yd. V type 36" ga. side dump cars.

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Gyratory crushers: K.V.S. 20, 37-S, 49; Telsmith 32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Jaw: 6x12, 9x16, 10x20, 12x26, 13x30, 15x30, 16x32, 36x48, 48x60.
Complete portable rock crushing plant, nearly new, with crusher, elevator, screen, etc.

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6—24" New Koppel V-Dump Cars, 1-yard
5—24" Easton V-Dump Cars, 1¼-yard
30"-g. Mercury 2-ton Battery Locomotives
8—36" Koppel V-Dump Cars, 3-yd. & 4-yd.
36" Whitcomb 8-ton & 4-ton Locomotives

CRUSHERS

Jaw—10x4", 15x9", 18x12", 20x10", 24x13", 36x24"—B Farrel & 36x24" Acme
Gyratory—8" Traylor, Nos. 25 & 37 Kennedys
Roll—54x20", 42x16", 36x16", 24x24", 36x24"—B Jeffrey & Penna. Hammermills
Ross Chain Crusher Feeder

BUCKET ELEVATORS: Encased & Open Types 5"x32', 7"x32', 8"x32', 10"x35', 12"x35', 14"x32', 14"x50', 16"x60', and 20"x40'.
Chain, Buckets, Belt, Casings, Drives

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Gears, Shafts, Collars, Bearings, Takeups

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⅝-yd. Byers Gas Shovel, Skimmer & Boom
Clamshell Buckets—½, ¾, 1¼ and 1½-yard
2 Insley Concrete Buckets, Bottom Dump
50-ton Blaw Knox Batcher Bin, 2-cpmt.
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2000—⅝" Universal Form Clamps
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100 Steel Racks.

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Machinery of sand lime brick plant, capacity up to 72,000 per day now operating and in good order. Includes boilers, engine, hydrator, bar mill, 3 presses, six dryers, trackage, sand cars, brick cars, all transmission equipment. Address Box A2, Care of Rock Products, 309 West Jackson Blvd., Chicago, Ill.

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PRODUCTION SUPERINTENDENT — Open for position at once. Familiar with the latest equipment and methods used in heavy production as well as small crushing plants, the quarrying to suit conditions and handling of labor and machinery successfully. I have always reduced operating expenses. In both slag and stone crushing. 51 years of age and equal to the severest task Midwest or Eastern location preferred. Address Box 998, Care of Rock Products, 309 West Jackson Blvd., Chicago Illinois.

POSITION WANTED — CEMENT Chemist, B.S. Five years experience as industrial, research and control chemist in the cement industry. Capable of taking charge of operations. Employed but desires more responsible position in research, development, or operation. Will furnish references from present employer. Age 29. Married. Address Box A1, Care of Rock Products, 309 W. Jackson Blvd., Chicago, Illinois.

POSITION WANTED — BY SALES ENGINEER HAVING 10 YEARS Experience in Design and Sales of rock and gravel crushing and screening equipment. Address Box A5, Care of Rock Products, 309 West Jackson Blvd., Chicago, Illinois.

POSITION WANTED — MECHANICAL engineer, 40 years in building and operating stone crushing plants, and operating quarries. References. Have built 35 plants in 19 states. Handled 95 men on one job. Have installed 50 ton castings. "Experience is the best Teacher." Address Box 985, care of Rock Products, 309 West Jackson Blvd., Chicago, Illinois.

POSITION WANTED — YOUNG MAN in thirties, now employed, desires change. Thorough knowledge of lime burning, shaft kilns, hydrators, crushing plant, open and mine quarries. Cost and maintenance. Have good education. Would consider plant manager or assistant in a progressive company. Address Box A6, Care of Rock Products, 309 West Jackson Blvd., Chicago, Illinois.

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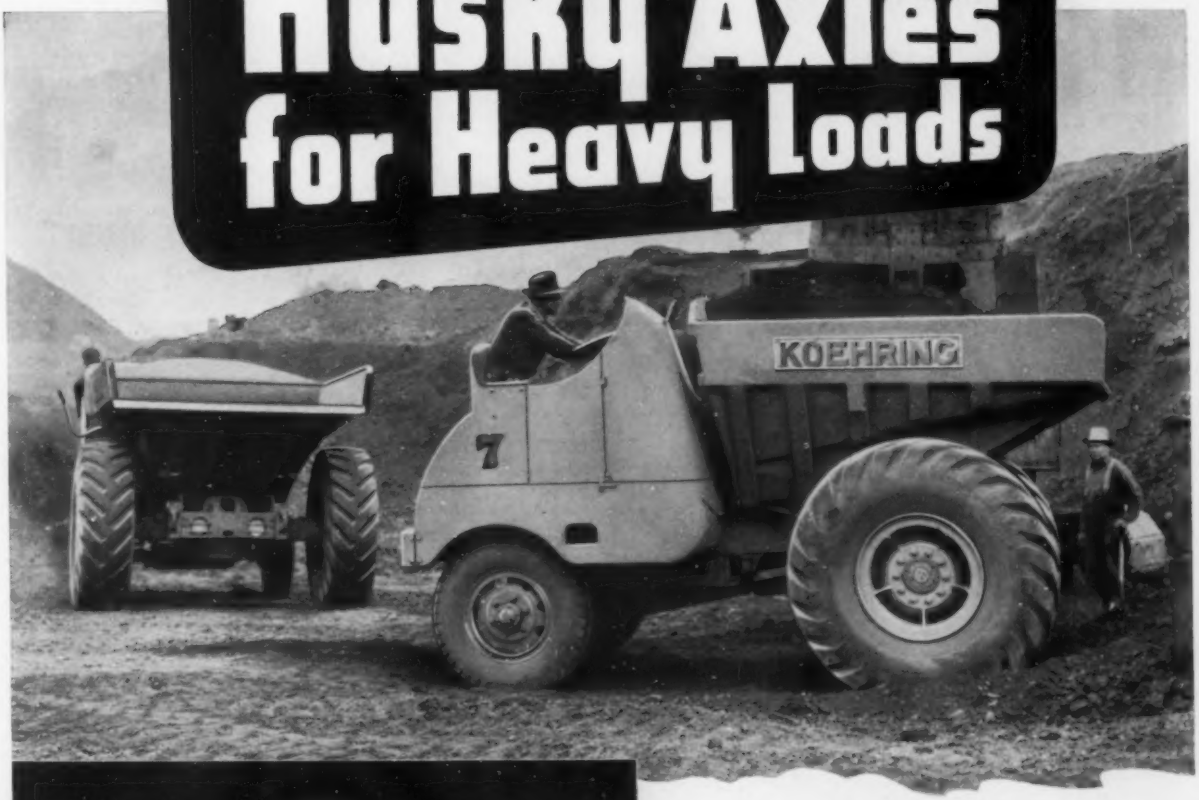
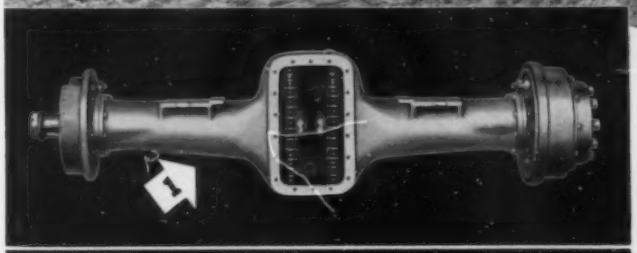
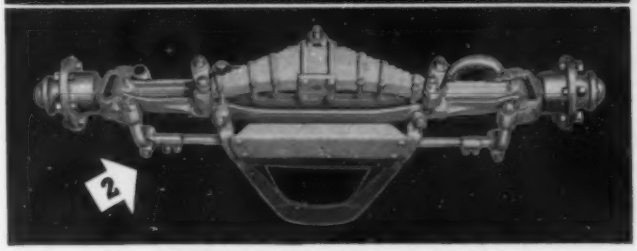
Husky Axles for Heavy Loads







1 Alloy steel drive axles housed in one piece alloy steel casting. Anti-friction bearings, splined shafting, alloy steel sprockets and chain.

2 Free oscillating, spring mounted, steering axle eliminates frame bending strains, when traveling over uneven grades.

KOEHRING DUMPTORS SCORE AGAIN

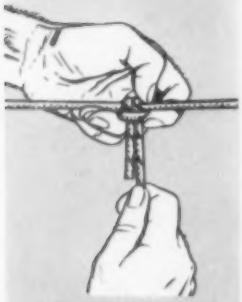
Another Koehring Dumptor success story . . . Open pit mine operators have recognized and accepted the flexibility and economy of Dumptors for hauling iron ore and stripping. Heavy loads of iron ore, approximately 4000 pounds per cubic yard, are easily carried by the husky Dumptor axles . . . designed and built for heavy loads. Satisfactory service with surprisingly low upkeep cost, under mine operation conditions, means long-lasting service on dirt and rock hauling jobs. Why don't you use Koehring Dumptors on your job? The investment is low, upkeep cost is low, more yards per hour are moved, your cost per yard is reduced. You can move more dirt or rock at lower costs, with Koehring Dumptors.

KOEHRING CO., *Milwaukee, Wis.*

KOEHRING HEAVY DUTY

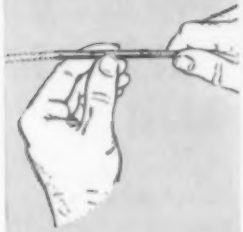
HEAVY-DUTY CONSTRUCTION EQUIPMENT

1. Tie through cartridge.



2. Half hitch branch to main line.

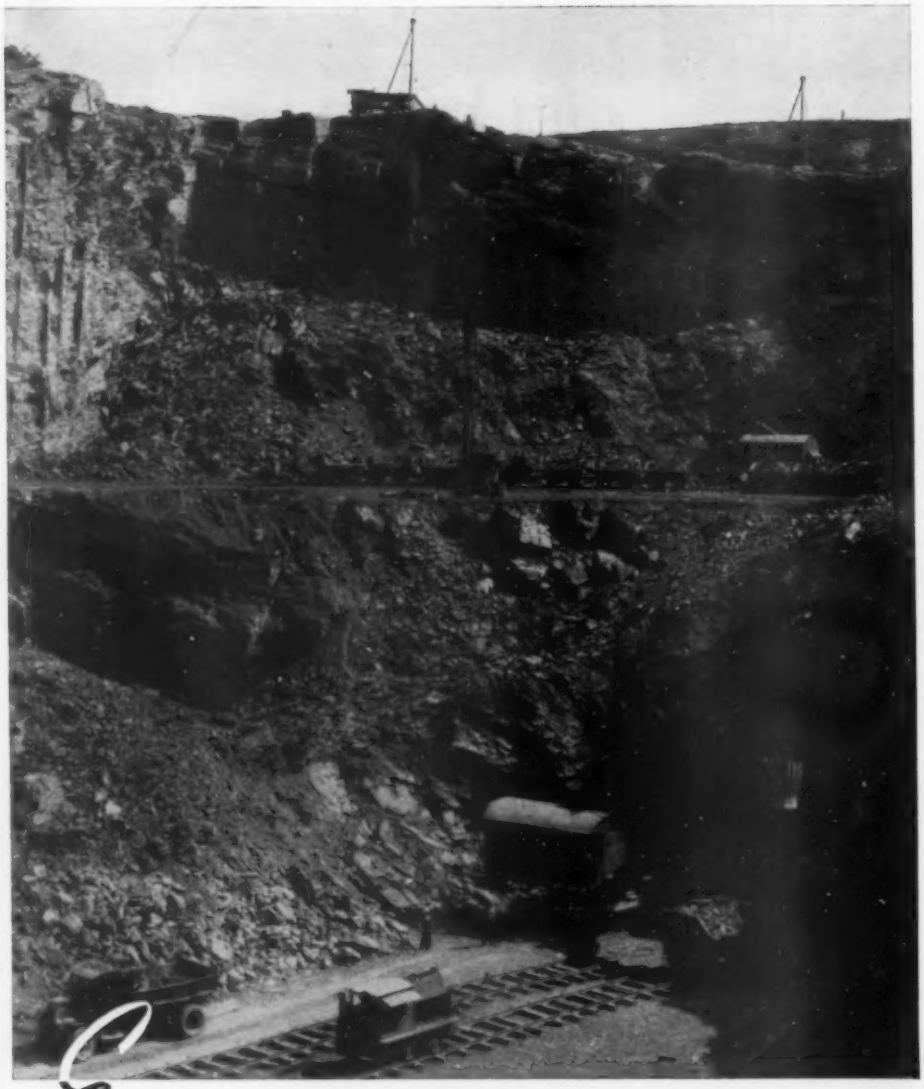
3. Connect main line lengths with *square* knot.



4. Fuse and cap on end of main line.

IMPORTANT

Branch lines should lead away from main lines at *right angles*. Avoid kinks and small loops.



Equipment moved LESS often

It *costs money* to remove track, pipe lines, shovels, and all the other equipment that must be out of the way when a blast *goes*. It *saves money* when you can do this *once* instead of two or more times.

How? By using Primacord to detonate and connect *more holes*. With Primacord-Bickford Detonating Fuse you can fire one hole or *a thousand* in one perfect blast. Fewer but bigger shots may hold some real economies for you. Write for the Primacord Book.

PB-34

PRIMACORD BICKFORD
Detonating Fuse

THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONN.
Makers of Cordeau-Bickford Detonating Fuse—and Safety Fuse since 1836

NO STONE UNTURNED

NO stone is left unturned to make the Bucyrus-Monighan Walker a dragline of simplicity and strength. Into each machine goes the skill of an engineering staff of unequalled experience in excavating practice, the finest materials, the precision of modern tools operated by master craftsmen.

That's why a Bucyrus-Monighan has

(1) Strength for long life
(2) Simplicity for low upkeep
(3) Long reach, quick swing for big output

But that's only half the story — because the large area base with low bearing pressure allows the machine to step up to the edge of the bank in dry weather or wet, gives you all-weather use of that long reach and quick swing.

This dragline is really a dirt mover — and where the dirt's really moving you'll find a Bucyrus-Monighan on the job!

BUCYRUS MONIGHAN

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